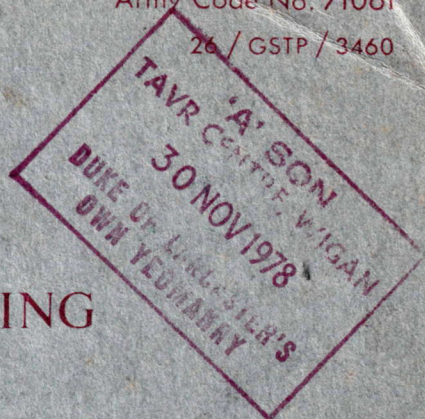


RESTRICTED

Army Code No. 71061

26 / GSTP / 3460



INFANTRY TRAINING

VOLUME I

Skill at Arms

(Individual Training)



Pamphlet No. 2

FIELD CRAFT AND FIRE CONTROL

(All Arms)

RESTRICTED

1976

RESTRICTED

The information given in this document is not to be communicated, either directly or indirectly, to the Press or to any person not authorized to receive it.

CONDITIONS OF RELEASE

(Applicable to copies supplied with Ministry of Defence approval to Commonwealth and Foreign Governments).

1. This information is released by the United Kingdom Government to the recipient Government for Defence purposes only.
2. This information must be accorded the same degree of security protection as that accorded thereto by the United Kingdom Government.
3. The information may be disclosed only within the Defence Department of the recipient Government, except as otherwise authorized by the Ministry of Defence (Army Department).

AMENDMENTS

Amendment No.	Date of Insertion

DISTRIBUTION

(See Catalogue of Army Publications, Part II)

Regular Army:

Infantry	Scale F
Other Arms and Services (less RACHD, QARANC, WRAC) ..	Scale D
School of Infantry	550 Copies

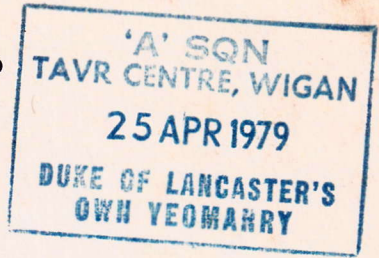
TAVR:

Infantry	Scale F
Other Arms and Services (less RACHD, QARANC, WRAC) ..	Scale C

RM	500 Copies
------------	------------

RAF	300 Copies
-------------	------------

RESTRICTED



INFANTRY TRAINING

Volume I Skill at Arms (Individual Training)



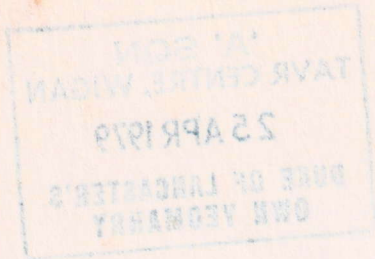
Pamphlet No. 2 Fieldcraft and Fire Control (All Arms) 1976

Crown Copyright Reserved

MINISTRY OF DEFENCE
NOVEMBER 1976

PREPARED UNDER THE DIRECTION OF
THE CHIEF OF THE GENERAL STAFF.

RESTRICTED



RESTRICTED

INFANTRY TRAINING

Volume I

Skills in Arms

(Individual Training)

Pamphlet No. 2

Fieldcraft and Fire Control

(All Arms)

1976

RESTRICTED

RESTRICTED

FOREWORD

1. Any unit wishing to propose amendments to this pamphlet is invited to write to the Chief Instructor of Small Arms Wing, School of Infantry, Warminster, Wiltshire. Any such proposals will be given consideration and if there is a requirement for them, the appropriate amendments will be prepared by the School of Infantry for submission to Headquarters, Director of Infantry.
2. This pamphlet supersedes the following:
 - a. Infantry Training, Volume 1. Infantry Platoon Weapons, Pamphlet No. 2, Fieldcraft (All Arms) 1954, WO Code No. 8890.
 - b. Infantry Training, Volume 1. Infantry Platoon Weapons, Pamphlet No. 12, Fire Control and Theory of Small Arms Fire (All Arms) 1949, WO Code No. 8419.

RESTRICTED

CONTENTS

	Page
Foreword	v
Associated publications	ix
Abbreviations	ix
Introduction	xi

CHAPTER 1.—THE BASIC SKILLS

Lesson 1.—Visual training	1-1
Lesson 2.—Personal camouflage and concealment	1-9
Lesson 3.—Judging distance by unit of measure	1-12
Lesson 4.—Judging distance by appearance	1-14
Lesson 5.—Judging distance by bracketing, halving and aids	1-17
Lesson 6.—Observation	1-19
Lesson 7.—Indication of targets	1-25
Lesson 8.—Reaction to fire control orders	1-28
Lesson 9.—Moving with or without weapons	1-39
Lesson 10.—Elementary obstacle crossing	1-42
Lesson 11.—Selecting a route across country	1-44
Lesson 12.—Stalking	1-47
Lesson 13.—Introduction to night training	1-55
Lesson 14.—Night Training. Use of the training theatre	1-59
Lesson 15.—Elementary night movement	1-62
Lesson 16.—Keeping direction at night	1-67
Lesson 17.—Issuing fire control orders	1-70
Lesson 18.—Range cards	1-75

CHAPTER 2.—PRACTICE PERIODS

Introduction	2-1
Practice 1.—Lessons 1 and 2	2-3
Practice 2.—Lessons 3, 4 and 5	2-5
Practice 3.—Lesson 6	2-7
Practice 4.—Lesson 7	2-9
Practice 5.—Lesson 9	2-11
Practice 6.—Lesson 17	2-13

CHAPTER 3.—DEMONSTRATIONS

Introduction	3-1
Demonstration 1.—Personal camouflage and concealment	3-5
Demonstration 2.—Observation at night	3-13
Demonstration 3.—(Live Firing)—Locating the enemy by his fire by day	3-19
Demonstration 4.—(Live Firing)—Locating the enemy by his fire at night	3-27

RESTRICTED

CHAPTER 4.—INFORMATION FOR THE INSTRUCTOR

Page

Section 1.—Training Tests	<i>Reserved</i> ..	4-1
Section 2.—Associated films .. .. .	.. .. .	4-1

CHAPTER 5.—THE THEORY OF SMALL ARMS FIRE

Section 3.—Definition of commonly used terms	5-11
Section 4.—Factors affecting sighting	5-13
Section 5.—Elementary theory (SLR)	5-14
Section 6.—Elementary theory (GPMG)	5-16
Section 7.—Observation of fire	5-17
Section 8.—The effect of ground on the beaten zone	5-18
Annex A.—Trajectory Table	5-19
Annex B.—Detailed wind table (7.62 mm)	5-21

ILLUSTRATIONS

Fig 1.—Contrast in shape	1-3
2.—Contrast in shape, silhouette and surface	1-4
3.—Personal camouflage	1-4
4.—Camouflaging the steel helmet	1-5
5.—Looking through or round, not over cover	1-5
6.—Looking over cover without breaking a straight line	1-6
7.—Avoiding a skyline	1-6
8.—Use of shadow	1-7
9.—Background	1-8
10.—Avoiding isolated cover	1-8
11.—Scanning	1-21
12.—The 'direct' method of indication	1-12
13.—The 'clock ray' method of indication	1-23
14.—Hand angle common measurements	1-24
15.—Binocular graticules	1-24
16.—The 'monkey run' without weapon	1-31
17.—The 'monkey run' with weapon	1-31
18.—The 'leopard crawl' without weapon	1-32
19.—The 'leopard crawl' with weapon (a)	1-32
20.—The 'leopard crawl' with weapon (b)	1-33
21.—The 'leopard crawl' with GPMG	1-33
22.—The 'roll' without weapon	1-34
23.—The 'roll' with weapon	1-34
24.—The 'walk'	1-35

RESTRICTED

Fig		Page
25.—The 'side crawl'	.. .. .	1-36
26.—The 'knee crawl'	.. .. .	1-36
27.—Combined 'leopard crawl'	.. .. .	1-37
28.—The panorama box	.. .. .	1-49
29.—The human eye ..	.. .. .	1-50
30.—Off centre vision	.. .. .	1-51
31.—Figure of eight technique	.. .. .	1-52
32.—Reading a map at night	.. .. .	1-53
33.—Finding the North Star	.. .. .	1-65
34.—Simple range card	.. .. .	1-73
35.—Detailed range card	.. .. .	1-74
36.—Suggested layout for Demonstration No. 1— Personal camouflage and concealment	.. .. .	3-3
37.—Suggested layout for Demonstration No. 2— Observation at night	.. .. .	3-11
38.—Suggested layout for Demonstration No. 3— Locating the enemy by his fire by day	.. .. .	3-17
39.—Suggested layout for Demonstration No. 4— Locating the enemy by his fire at night	.. .. .	3-25
40.—Definitions	.. .. .	5-1
41.—The range	.. .. .	5-1
42.—The height of the weapon above the target area	.. .. .	5-2
43.—The height of the target engaged	.. .. .	5-2
44.—The flatness of the trajectory	.. .. .	5-2
45.—The shape of the ground	.. .. .	5-3
46.—Elevation	.. .. .	5-3
47.—7.62 mm Ball ammunition	.. .. .	5-4
48.—The inside of the barrel	.. .. .	5-5
49.—GPMG cone of fire (bipod mounted)	.. .. .	5-6
50.—GPMG cone of fire (tripod mounted)	.. .. .	5-7
51.—Dangerous space, dangerous zone and beaten zone	.. .. .	5-8
52.—GPMG beaten zones at 500 and 1000 metres	.. .. .	5-8
53.—Permissible error	.. .. .	5-9
54.—Cone of fire against a steep hillside	.. .. .	5-9
55.—Cone of fire against rising ground	.. .. .	5-10
56.—Cone of fire on level ground	.. .. .	5-10
57.—Cone of fire on reverse slope	.. .. .	5-10
58.—A defiladed zone	.. .. .	5-10

RESTRICTED

ASSOCIATED PUBLICATIONS, FILMS AND FILMSTRIPS

Publications:

Army Code No.

TITLE

71012	..	..	..	Infantry Training, Volume II, Skill at Arms (Personal Weapons) Pamphlet No. 7, 7-62 mm Self Loading Rifle (All Arms) 1975.
71026	..	..	..	Infantry Training, Volume II, Skill at Arms (Personal Weapons) Pamphlet No. 8, Part I, General Purpose Machine Gun, Light Role (All Arms) 1975.
70946	..	..	..	Manual of Map Reading 1973.

Films:

Catalogue No.

C 1201	..	..	..	Individual Fieldcraft
C 1202	..	..	..	Finding the Enemy
C 1203	..	..	..	Night Marksmanship
C 1207	..	..	..	Night Vision
C 1208	..	..	..	Night Warfare
C 7922	..	..	..	Dangerous Noise. Part 1—Listen While You Can
C 7924	..	..	..	Dangerous Noise. Part 3—Hear Your Enemy

Filmstrips:

Catalogue No.

D 863	..	..	..	Theory of Small Arms Fire
-------	----	----	----	---------------------------

ABBREVIATIONS

CEFO	..	..	..	Combat equipment fighting order
CUB	..	..	..	Common user binoculars
IWS	..	..	..	Individual weapon sight
LNV	..	..	..	Limit of night vision

RESTRICTED

RESTRICTED

RESTRICTED

INFANTRY TRAINING

VOLUME 1—SKILL AT ARMS (INDIVIDUAL TRAINING)

PAMPHLET NO. 2

FIELDCRAFT AND FIRE CONTROL

INTRODUCTION

General

1. Fieldcraft is an integral part of Skill at Arms training. Unless the soldier learns marksmanship, technical handling and fieldcraft 'hand in hand' his progress towards becoming a proficient battle shot suffers.
2. Individual fieldcraft training is an excellent way of developing character; and if promising soldiers are allowed to lead and act as assistant instructors they will learn a lot about leadership.
3. Every soldier must become an expert at fieldcraft; he must be able, by day and by night, to:
 - a. Use his eyes and ears to find the enemy without being seen himself.
 - b. Always make the best use of ground and cover.
 - c. Estimate distances and ranges accurately.
 - d. Indicate and recognize targets, obey fire control orders and understand fire discipline.
 - e. Move silently, with or without weapons, stores or equipment.
 - f. Act aggressively on his own, out of sight and earshot of his comrades.
 - g. Be alert, confident and cunning whatever happens.

Aim of the Pamphlet

4. This pamphlet contains all the material that an instructor needs to teach soldiers individual fieldcraft.

Layout of the Pamphlet

5. The pamphlet, written in lesson form, is laid out in five chapters as follows:
 - a. Chapter 1 consists of the instructional lessons and contains the basic instruction and handling skills which must be taught.
 - b. Chapter 2 consists of practice periods which are designed to confirm the facts and skills taught in Chapter 1.

RESTRICTED

- c. Chapter 3 consists of suggested demonstrations including Live Firing which are designed to more fully illustrate the various skills and techniques which are taught in Chapter 1 and practised in Chapter 2.
 - d. Chapter 4 consists of information of special interest to the instructor so that he can improve his own knowledge of the subject and his presentation of the matter within the lessons in Chapter 1. This chapter also contains details of the tests which are used to determine the soldier's standard.
 - e. Chapter 5 consists of six sections concerning the theory of Small Arms Fire which will provide useful information for the instructor and the Fire Unit commander.
- 6. Each lesson is divided into two parts:
 - Part A—Instructors Notes. Contains the information required by the instructor to enable him to prepare for the lesson.
 - Part B—Conduct of the Lesson. Contains the matter to be taught and is laid out in a proven sequence.
 - 7. Details printed in *italics* are instructions to the instructor.

Organization of Instruction

- 8. Instructors are allowed latitude in the method they adopt to teach the various lessons provided they do not deviate from the facts and drills laid down. Fieldcraft, properly presented is an interesting subject and presents a challenge to the soldier.
- 9. Fieldcraft is best taught by means of demonstrations, including films, explaining to the soldiers what they are seeing and then confirming by practice as soon as possible.
- 10. Demonstrations must be carefully prepared and rehearsed whether they are on a big scale, or just the instructor showing his squad how to crawl. Poor demonstrations are of little value.
- 11. Practice periods can be repeated according to progress made.
- 12. Fieldcraft does not lend itself to strict 40 minute periods. Some lessons and practices need far longer and others are best combined into a day and night exercise.

Safety Precautions

- 13. Before every lesson, all weapons, magazines, drill cartridges, spare parts wallets, containers and soldiers pouches must be inspected to ensure that no live ammunition is present.
- 14. *Reserved.*

RESTRICTED

CHAPTER 1

THE BASIC SKILLS

LESSON 1—VISUAL TRAINING

A. INSTRUCTOR'S NOTES

15. **Aim.** *To introduce visual training and teach why things are seen.*

16. **Timings.** *One 40 minute period.*

17. **Method.** *A basic instructional outdoor period.*

18. **Stores:**

Various pieces of military equipment

Loud hailer/Public address equipment

Signal flag

Demonstrators

See paragraph 20.a

As available

1

As necessary

19. **Preparation:**

a. *Reconnoitre the training area and position the equipment in such a way as to demonstrate clearly one of the factors (shape, silhouette, etc). This is best done immediately prior to the lesson so that there is less chance of daylight conditions changing and the demonstration losing effect.*

b. *Rehearse the demonstrators involved.*

20. **Miscellaneous:**

a. *Where possible there should be at least two of each item of equipment; one to be used at the squad position to explain the factor (shape, shine, etc), and the other located in the open at a suitable range to demonstrate it.*

b. *If using a signal flag to control demonstrators, rehearse them in the signals and actions before sending them to their demonstration positions.*

B. CONDUCT OF THE LESSON

Preliminaries

21. **Safety Precautions.** *Normal as applicable to the equipment being used.*

22. **Revision.** *Nil. Indicate the area to be used for the demonstrations.*

Introduction

23. **Explain.** *Visual training is training to observe coupled with a knowledge of how to conceal. To observe is to see through the enemy's concealment; to conceal is to defeat his observation. Once trained in both, the soldier can locate and kill the enemy without being seen.*

RESTRICTED

Why Things are Seen (see Figs 1 and 2)

24. *Explain and demonstrate each in turn.* Whether an object is easy or difficult to see depends upon several factors, the chief of which are:

a. *Shape.* Some things can be recognised instantly by their shape, particularly if it contrasts with the surroundings. Three easily distinguishing shapes which require disguise for concealment are:

- (1) The clear cut shape of a soldier's outline.
- (2) The smooth round top of a steel helmet.
- (3) The hard line of a helmet brim.

b. *Shadow.* In sunlight, an object must cast a shadow which gives away its presence. For concealment, keep in the shade if possible. The shade affords cover and there are no tell-tale shadows. Remember that as the sun moves, so do the shadows.

c. *Silhouette.* Any object silhouetted against a contrasting background is conspicuous. Smooth flat backgrounds such as water, a field, or worst of all the sky should be considered dangerous. An object may also be silhouetted if it is against the background of another colour. For concealment, choose an uneven background such as a hedge, bush, trees or broken ground.

d. *Surface.* If an object has a surface that contrasts with its surroundings, it is conspicuous. Shiny helmets and white skin contrast violently with most backgrounds and need to be disguised to assist concealment.

e. *Spacing.* Natural objects are never regularly spaced. Regular spacing means man-made objects. For concealment avoid regular spacing.

f. *Movement.* The eye is attracted to movement, especially sudden movement. For concealment, movement has to be slow and cautious.

g. *Aircraft.* An upturned face is easily spotted by an airborne observer. To assist concealment when being searched for by spotter aircraft/helicopters avoid the desire to look directly upwards.

25. *Confirm by practice.*

Conclusion

26. *End of Lesson Drill:*

a. *Questions from the squad on the entire lesson.*

b. *Confirm by questions and practice.*

c. *Normal safety precautions.*

d. *Pack kit.*

e. *Summary. To include the following:*

- (1) The importance of knowing why things are seen and what to do to assist in concealment.
- (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

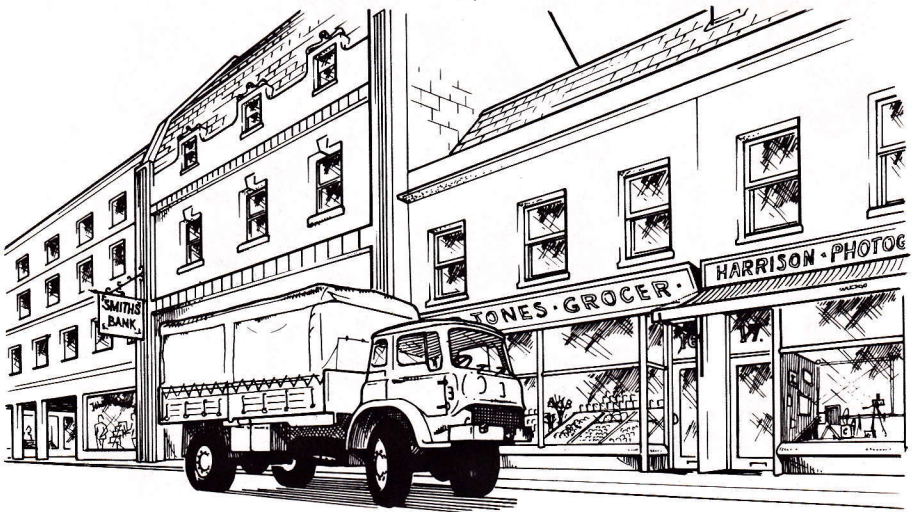
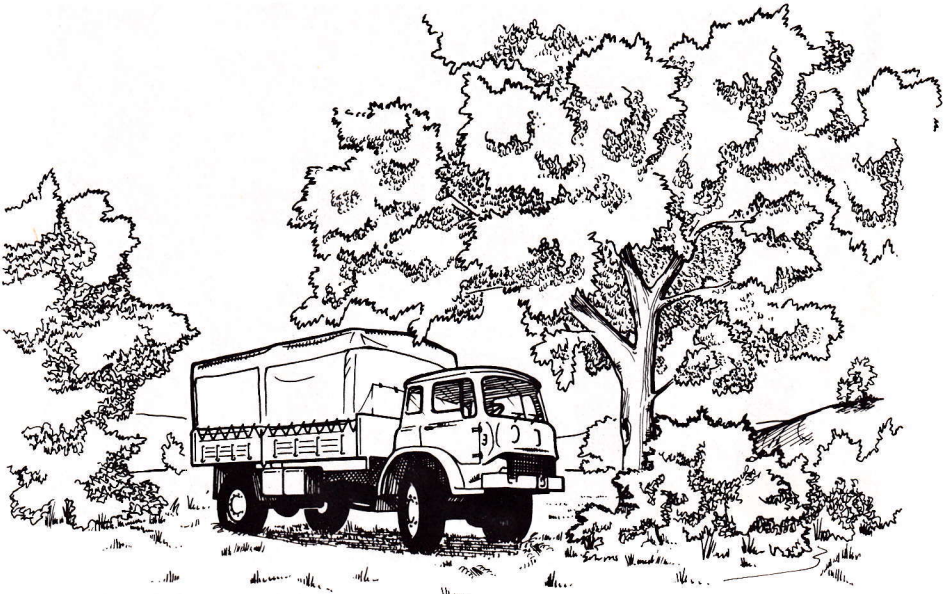


Fig 1. Contrast in shape

1-3

RESTRICTED

RESTRICTED



Fig 2. Contrast in shape, silhouette and surface



Fig 3. Personal camouflage

1-4

RESTRICTED

RESTRICTED

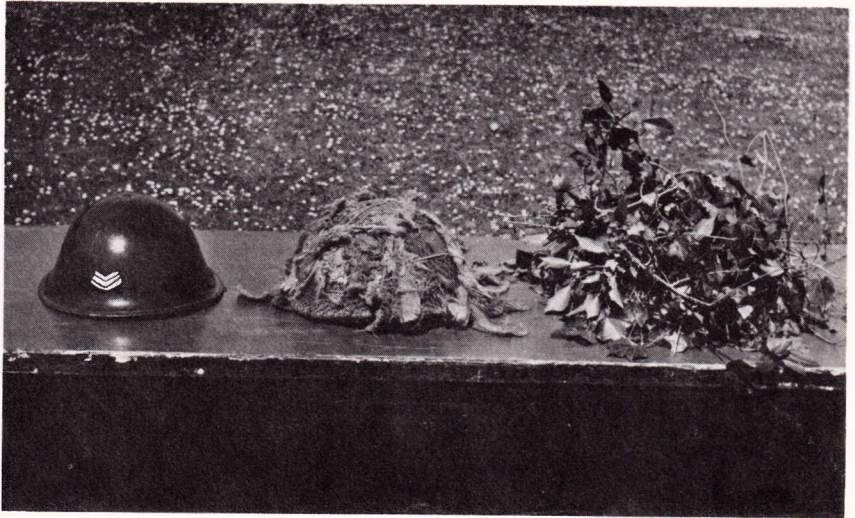


Fig 4. Camouflaging the steel helmet



Fig 5. Looking through or round, not over cover

1-5

RESTRICTED

RESTRICTED



Fig 6. Looking over cover without breaking a straight line



Fig 7. Avoiding a skyline

1-6

RESTRICTED

RESTRICTED

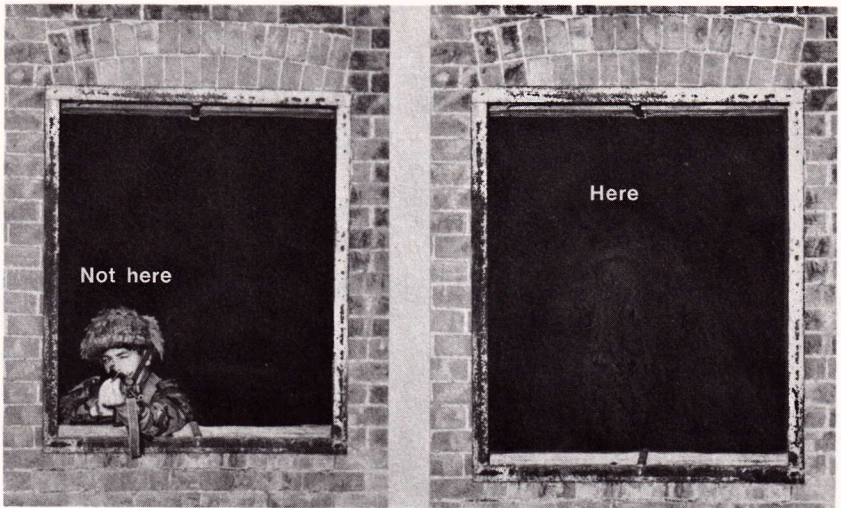


Fig 8. Use of shadow

1-7

RESTRICTED

RESTRICTED

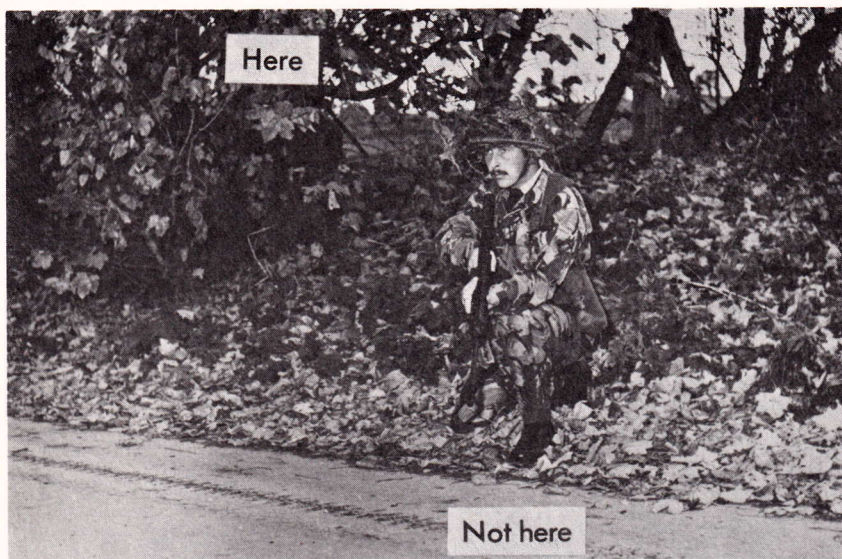


Fig 9. Background



Fig 10. Avoiding isolated cover

1-8

RESTRICTED

RESTRICTED

LESSON 2—PERSONAL CAMOUFLAGE AND CONCEALMENT

A. INSTRUCTOR'S NOTES

27. **Aim.** To teach personal camouflage and concealment.
28. **Timings.** One 40 minute period.
29. **Method.** A basic instructional outdoor period.
30. **Stores:** (Soldiers should be dressed in CEFO).
- | | |
|--------------------------------------|------------------------|
| Helmet | 1 (demonstration only) |
| Camouflage cream | As required |
| Hessian/scrim | As required |
| Loud hailer/Public address equipment | As available |
| Signal flag | 1 |
| Demonstrators | As necessary |
31. **Preparation:**
- Reconnoitre the training area and select positions to best illustrate the factors in paragraph 38 (see Figs 5 to 10).
 - Rehearse the demonstrators involved, preferably immediately prior to the squad arriving.
32. **Miscellaneous:**
- Ideally, soldiers should have seen the training film 'Individual Fieldcraft' (Code No 1201) before being taught this lesson.
 - When the squad have finished their practice in camouflage, order them to jump up and down a couple of times to ensure that any foliage used is secure and check that they can aim correctly with their camouflaged weapons.
 - If using a signal flag to control demonstrators during the concealment phase, rehearse the signals and actions before sending demonstrators to their positions.
 - Questions on the rules for concealment should be carefully prepared to avoid ambiguity.
 - Practice in concealment is contained in Chapter 2 Practice 1.

B. CONDUCT OF THE LESSON

Preliminaries

33. **Safety Precautions.** Normal as applicable to the weapons involved.
34. **Revision.** Question the squad on 'Why things are seen'. Indicate area of observation for the demonstration.

RESTRICTED

Introduction

35. *Explain.* The soldier must know how to camouflage and conceal himself in battle or he will be an easy target for the enemy.

Individual Camouflage

36. *Explain and demonstrate using one uncamouflaged and one fully camouflaged demonstrator.* The tone and colour of the hands, neck and face, surface and silhouette of the helmet and pack must not contrast with their backgrounds. To avoid contrasts:

- a. Put camouflage cream, mud, burnt cork or something similar on the face, neck and hands. Put more on for night work than for day (*see* Fig 3) as white objects appear whiter in dim light.
- b. Put a hessian cover on the helmet to dull the shine, a net on top of that to hold scrim, etc, and garnishing in the net to disguise the helmet's distinctive shape, in particular the shadow under the brim (*see* Fig 4).
- c. Tie string across equipment and use it to hold foliage, etc, to break up the outline.
- d. Weapons can be camouflaged by binding hessian around shiny metal or wooden parts. Ensure that the gas ports are not blocked or the view through the sights obscured.

37. *Confirm by practice (see paragraph 32.b.). Use the master/pupil method.*

Concealment

38. *Explain and demonstrate.* Obeying the following rules will assist in good concealment:

- a. Look round or through cover, rather than over it (*see* Fig 5). If compelled to look over it, avoid breaking a straight line (*see* Fig 6).
- b. Avoid skylines. (*See* Fig 7).
- c. Make use of available shadow. Remember that when in the sun one's own shadow is very conspicuous and that shadows move with the sun (*see* Fig 8).
- d. Choose a background to match the clothing and equipment being worn. (*See* Fig 9).
- e. Avoid isolated cover as the enemy is likely to be observing it and it is easy to bring fire down on to this type of cover (*see* Fig 10).
- f. Move carefully especially when moving into or out of cover.

39. *Confirm by questions.*

Conclusion

40. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice.*

RESTRICTED

- c. *Normal safety precautions.*
- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) Good camouflage and concealment allow the soldier to see without being seen in order to kill without being killed.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

LESSON 3—JUDGING DISTANCE BY UNIT OF MEASURE

A. INSTRUCTOR'S NOTES

41. **Aim.** To teach how to judge distance by using the unit of measure method.
42. **Timings.** One 40 minute period.
43. **Method.** A basic instructional outdoor period.
44. **Stores:**
- | | |
|--------------------------------------|--------------|
| Loud hailer/Public address equipment | As available |
| Fig 11 targets (staked) | 4 |
| Small flags on sticks | 12 |
| 100 metre measuring tape | 1 |
45. **Preparation:**
- a. Put out the Fig 11 targets, each 100 metres from a central viewpoint, so that they can be seen across different types of ground, open or broken, rising, falling and flat. All the ground from the viewpoint to each target is to be visible.
- b. Choose three objects up to 400 metres from the viewpoint and lay a small flag on the ground every 100 metres between viewpoint and object. Ensure that distances are accurate.
46. **Miscellaneous:**
- a. **Suggested practice:**
- (1) Get the squad to look at the figure targets from all firing positions and try to remember what 100 metres distance looks like.
- (2) Order the squad to put themselves 100 metres from a given object. Discuss each soldier's error with him and continue this type of practice until the squad get consistent results. Some may consistently over or under estimate and they must take this into consideration when fitting in their 100 metre units.
- (3) Get the squad to judge the distance to each object which was prepared beforehand and to explain how they fitted in their units. Order one of the soldiers to raise the small 100 metre spaced flags and discuss the results obtained.
- b. It is important that having been taught this method, soldiers are practised in its use at every opportunity; during rest periods, in barracks, etc.
- c. This lesson may be combined over two periods with Lesson 4—Judging Distance by Appearance Method.

B. CONDUCT OF THE LESSON

Preliminaries

47. **Safety Precautions.** Normal.
48. **Revision.** Nil. Indicate area of observation for the demonstration.

RESTRICTED

Introduction

49. *Explain.* In order to report on the enemy's positions, the soldier has to judge distances accurately. There are several methods of judging distance and this lesson deals with one of them; the 'Unit of Measure' method.

The Unit of Measure

50. *Explain:*

- a. Provided all the ground between the soldier and the object is visible, the soldier can use 100 metres as a unit of measure and estimate how many of these units he can fit in between himself and this object.
- b. This method is not very accurate for estimating distances over 400 metres.

51. *Confirm by practice (see paragraph 46.a.).*

Conclusion

52. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice.*
- c. *Normal safety precautions.*
- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) The importance of remembering individual tendency to under/over estimate when using this method.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

LESSON 4—JUDGING DISTANCE BY APPEARANCE

A. INSTRUCTOR'S NOTES

53. *Aim.* To teach how to judge distance by using the appearance method.
54. *Timings.* One 40 minute period.
55. *Method.* A basic instructional outdoor period.
56. *Stores:*
- | | |
|--------------------------------------|-------------------------|
| Rifles | 1 per soldier |
| Loud hailer/Public address equipment | As available |
| Signal flag | 1 |
| 100 metre measuring tape | 1 |
| Range card | 1 (see paragraph 57 a.) |
| Military equipment | As necessary |
| Chalkboard | 1 |
| Demonstrators (Wearing CEFO) | 6 (minimum requirement) |
57. *Preparation:*
- Prepare a range card of the area and include soldiers and items of military equipment at ranges up to 100 metres.
 - Position demonstrators at 100 metre intervals up to 600 metres for the first demonstration and tell them, if applicable, their position for the judging distance practice. If a gallery range is available, put the demonstrator on, or in line with the firing points.
 - Select objects which will demonstrate most clearly the conditions that make objects seem closer or further away. This is best done immediately prior to the arrival of the squad so that there is less chance of light conditions changing.
 - Prepare a chalk board listing the detail in paragraph 63.
58. *Miscellaneous:*
- If using a signal flag to control demonstrators, rehearse the signals and actions before sending the demonstrators to their positions.
 - By using demonstrators show what an individual soldier looks like at ranges up to 600 metres in the standing, kneeling and lying positions.
 - Set a time limit for each problem.

B. CONDUCT OF ONE LESSON

Preliminaries

59. *Safety Precautions.* Normal.

RESTRICTED

60. **Revision.** *Indicate area of observation for the demonstration and revise the unit of measure method.*

Introduction

61. *Explain.* The appearance method of judging distance is based on what an object looks like compared to its surroundings. The soldier must know what various objects, e.g., trees, gates, houses, soldiers, etc., look like at various ranges.

Appearance Method

62. *Explain and demonstrate (see paragraph 57 b.):*

a. The amount of visible detail of a soldier at various ranges gives a good indication of the distance he is away.

(1) At 100 metres—clear in all detail.

(2) At 200 metres—clear in all detail, colour of skin and equipment identifiable.

(3) At 300 metres—Clear body outline, face colour good, remaining detail blurred.

(4) At 400 metres—Body outline clear, remaining detail blurred.

(5) At 500 metres—Body begins to taper, head becomes indistinct.

(6) At 600 metres—Body now wedge shaped, no head apparent.

b. It is useful to know the amount of foresight that will cover a soldier for ranges up to 600 metres. (Allow the squad to note this for 300 and 500 metres).

Conditions Affecting Appearance (*Demonstrators move to second locations*)

63. *Using the prepared chalk board, explain and demonstrate:*

a. Objects seem closer than they are when:

(1) The light is bright or the sun is shining from behind the observer.

(2) They are bigger than the other objects around them.

(3) There is dead ground between them and the observer.

(4) They are higher up than the observer.

b. Objects seem further away than they are when:

(1) The light is bad or the sun is in the observer's eyes.

(2) They are smaller than the other objects around them.

(3) Looking across a valley or down a street.

(4) The observer is lying down.

64. *Confirm by practice (see paragraph 57.c.).*

Conclusion

65. **End of Lesson Drill:**

a. *Questions from the squad on the entire lesson.*

b. *Confirm by questions and practice.*

c. *Normal safety precautions.*

RESTRICTED

- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) The importance of the factors affecting appearance when judging distance using this method.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

LESSON 5—JUDGING DISTANCE BY BRACKETING, HALVING AND AIDS

A. INSTRUCTOR'S NOTES

66. *Aim. To teach:*
- a. *How to judge distance by using the bracketing and halving methods.*
 - b. *The use of aids to judging distance.*
67. *Timings. One 40 minute period.*
68. *Method. A basic instructional outdoor period.*
69. *Stores:*
- | | |
|--|----------------------|
| <i>Range card (see paragraph 70. a.)</i> | <i>1</i> |
| <i>Binoculars</i> | <i>As available</i> |
| <i>Rifles</i> | <i>1 per soldier</i> |
70. *Preparation:*
- a. *Reconnoitre the training area and select an area with prominent features both natural and artificial, the true ranges of which are known to the instructor and recorded on a range card.*
 - b. *Select the objects to be estimated and the method to be used during practice.*
71. *Miscellaneous. After the initial practice, encourage the soldiers to use a combination of the methods they have been taught to assist in accurate estimation of distance.*

B. CONDUCT OF THE LESSON

Preliminaries

72. *Safety Precautions. Normal.*

73. *Revision. Indicate the area of observation and revise the unit of measure and appearance methods of judging distance.*

Introduction

74. *Explain. Accurate judging of distance is a skill which each soldier requires to develop if he is to engage the enemy effectively and without waste of ammunition. It is important, therefore, that he knows all recognized methods of judging distance and any aids which can be used to assist him in his estimating.*

Bracketing and Halving

75. *Explain and demonstrate. Other methods of judging distance are:*
- a. *Bracketing. This method is likely to prove the best under all conditions. Decide on the furthest possible distance and the nearest possible distance to the object;*

RESTRICTED

the average of these is taken as the range, i.e., furthest distance = 1000 metres, nearest distance = 600 metres range is therefore 800 metres.

b. *Confirm by practice.*

c. *Halving.* This method is useful for judging distance up to 1000 metres. Estimate the distance to a point halfway, and in a direct line to the object, then double it. The chief disadvantage of this method is that any error made in judging the distance to the halfway point is doubled for the full distance.

d. *Confirm by practice.*

Aids to Judging Distance

76. *Explain and demonstrate.* The following aids, when available, can be used:

a. *Key Ranges.* When the range to any point within the arc of observation is known, the distance to another object can be estimated from it provided that the object is reasonably near to the key range object.

b. *Confirm by practice.*

c. *Unit Average.* Provided that there is sufficient time available, get several soldiers to estimate the distance and take the average of their answers.

d. *Confirm by practice.*

e. *Binoculars.* These can be used to estimate distance, particularly at longer ranges, provided that the height of an object is known. The smallest graticule will cover an object 4 metres (12 feet) high at 1000 metres e.g., 4 ton truck and 8 metres (24 feet) high at 2000 metres. These facts can be usefully employed i.e., a landrover (2 metres high) will fill half of the graticule at 1000 metres, quarter at 2000 metres. A tank (3 metres high) will fill three quarters of the graticule at 1000 metres and just under half at 2000 metres.

f. *Confirm by practice.*

g. *Ranging Fire.* Using a correctly zeroed weapon, estimate the distance to the object, set that on the sights and fire tracer ammunition. Observe the strike and adjust the sight setting and fire again until the tracer is seen to strike the object. Take the sight setting as being the distance to the object.

Conclusion

77. *End of Lesson Drill:*

a. *Questions from the squad on the entire lesson.*

b. *Confirm by questions and practice.*

c. *Normal safety precautions.*

d. *Pack kit.*

e. *Summary. To include the following:*

(1) The importance of combining the known methods to obtain a greater degree of accuracy.

(2) A forecast of the squad's next lesson in this subject.

RESTRICTED

LESSON 6—OBSERVATION

A. INSTRUCTOR'S NOTES

78. **Aim.** To teach how to systematically observe an area of ground.

79. **Timings.** One 40 minute period.

80. **Method.** A basic instructional outdoor period.

81. **Stores:**

Various items of military equipment	
Pointer staff	1 (minimum)
Sheets of paper and pencils	1 per soldier
Loud hailer/Public address equipment	As available
Signal flag	1
Chalkboard	1
Demonstrators (wearing CEFO)	As necessary

82. **Preparation:**

a. Reconnoitre the training area and select an area of ground to divide into foreground, middle distance and distance.

b. Position demonstrators and equipment so that they provide varying degrees of contrast in colour, tone, surface, shape and shadow. This is best done as close to the lesson start time as is possible.

c. Prepare a chalkboard as per Fig 11.

83. **Miscellaneous:**

a. Rehearse the demonstrators in their actions prior to sending them to their locations.

b. Some equipment need not be too well concealed but all demonstrators should provide realistic battle type targets.

c. Visual training film 'Finding the enemy' (Code No C1202) is a useful supplement to this lesson but should not be considered as an alternative to the outdoor period.

d. During practice, ask the squad what they have observed and how they identified the objects. Let them confirm locations using the pointer staff.

B. CONDUCT OF THE LESSON

Preliminaries

84. **Safety Precautions.** Normal.

85. **Revision.** Revise why things are seen. Indicate area of observation.

RESTRICTED

Introduction

86. *Explain.* In order to locate the enemy, whom it is to be assumed are adept at the skills of camouflage and concealment, the soldier requires to learn how to observe by scanning and searching.

Scanning and Searching

87. *Explain and demonstrate.* Scanning is a general and systematic examination of an area to detect any unusual or significant object or movement. Searching is a thorough examination of certain features in the area. Both require complete concentration combined with a knowledge of why things are seen and the principles of camouflage and concealment.

a. *Scanning:*

(1) Divide the area into foreground, middle distance and distance.

(2) Scan each area horizontally (*see* Fig 11) starting with the foreground. To obtain maximum efficiency, move the eyes in short overlapping movements. Moving the head will minimize eye fatigue. The speed at which scanning is carried out will depend upon the type of country being observed and the amount of cover it affords to possible targets.

(3) When horizontal scanning is completed, scan along the line of any features which are angled away from the observation position.

b. *Searching.*

(1) Searching may take place at any stage during scanning i.e., if the soldier's position is dominated by a piece of ground, he should search that area thoroughly before continuing with scanning. Furthermore, any significant movement or object, suspected camouflage, etc., spotted during scanning would require an immediate search of that area. The optic sight is a useful aid when searching ground in detail.

(2) Search for each of the factors of why things are seen in turn. The weather may assist, i.e., frost will reveal tracks made during the night or a hot sun will alter the tone and colour of foliage used for camouflage by withering its leaves.

(3) Search across hedgerows or a row of trees, not along them.

88. *Confirm by practice.*

Conclusion

89. *End of Lesson Drill:*

a. *Questions from the squad on the entire lesson.*

b. *Confirm by questions and practice.*

c. *Normal safety precautions.*

d. *Pack kit.*

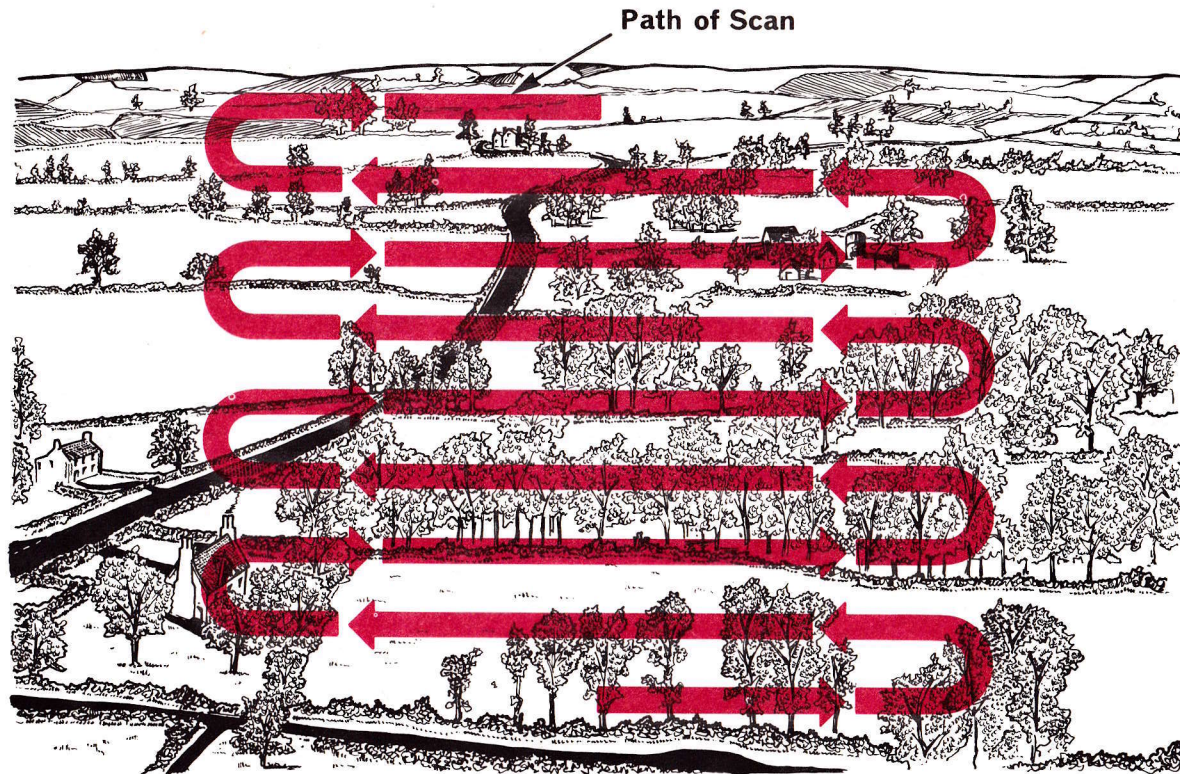
e. *Summary. To include the following:*

(1) The fact that the key to good observation is a thorough knowledge of the principles of concealment.

(2) A forecast of the squad's next lesson in this subject.

RESTRICTED

1-21



RESTRICTED

Fig 11. Scanning

RESTRICTED

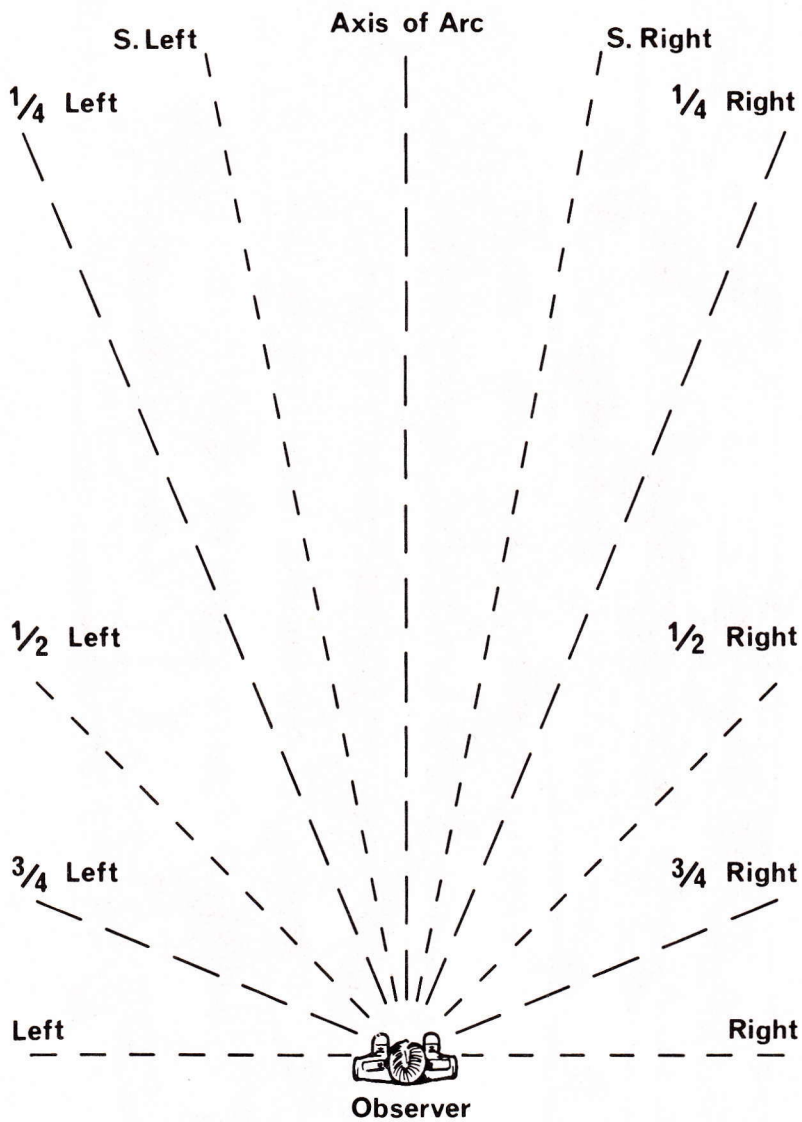


Fig 12. The 'direct' method of indication

RESTRICTED

RESTRICTED



Fig 13. The 'clock ray' method of indication

RESTRICTED

RESTRICTED

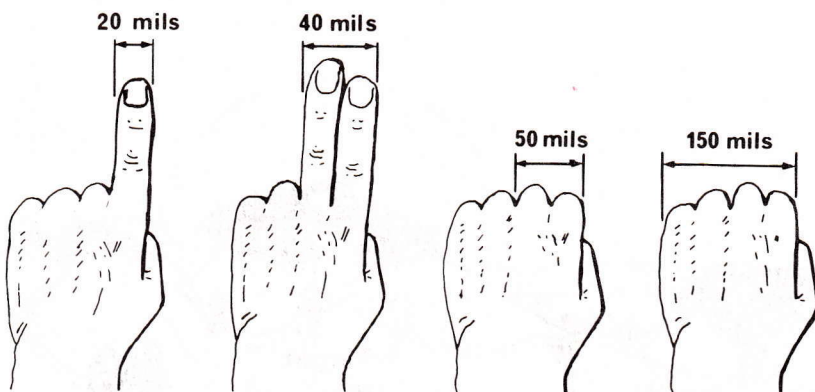
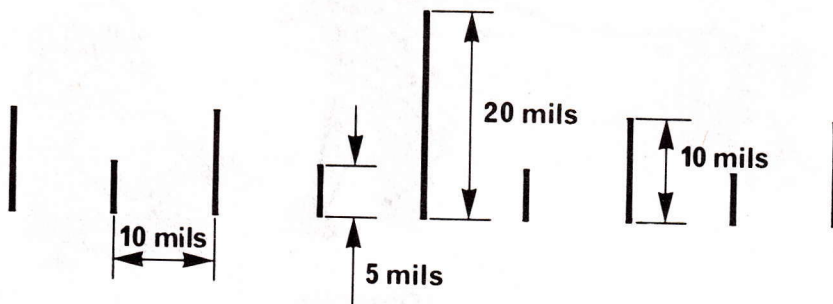


Fig 14. Hand angle common measurements



Note : All dimensions are approximate.

Fig 15. Binocular gratitudes

RESTRICTED

LESSON 7.—INDICATION OF TARGETS

A. INSTRUCTOR'S NOTES

90. *Aim.* To teach how to recognise and indicate targets.
91. *Timings.* One 40 minute period.
92. *Method.* A basic instructional outdoor or indoor period.
93. *Stores:*
- | | |
|------------------------------------|-------------------------|
| Pointer Staff | 1 (minimum requirement) |
| Landscape targets | 3 (indoor only) |
| Clock face (black figures on talc) | 1 |
| Mils measuring chart | 1 |
| Chalkboard | 1 |
| Binoculars | As available |
94. *Preparation:*
- Reconnoitre the training area and select:
 - Arc of fire and reference points.
 - Realistic battle targets to use during demonstration and practice in direct, reference point, clock ray and hand angle methods of indication.
 - Prepare a chalkboard listing the methods of indication, by headings only.
 - If taking the lesson indoors position three adjoining landscapes against one wall and mark the squad's position not more than 10 metres from them.
 - Prepare a drop of the direct method (see Fig 12).
95. *Miscellaneous:*
- During practice in recognition of targets, let the soldier indicate his answer using a pointer staff.
 - During practice in indication:
 - Indicate the target using a pointer staff.
 - Write down everything that the soldier says during his indication.
 - Confirm recognition of the target with the squad using a pointer staff.
 - Discuss the method and manner of the indication.
 - If the lesson has to be taken indoors, it is essential that the soldier is given practice outdoors at the earliest opportunity. An indoor lesson does not give the soldier the opportunity either to judge the distance to the target or to use a realistic arc of fire.

B. CONDUCT OF THE LESSON

Preliminaries

96. *Safety Precautions.* Normal.

RESTRICTED

97. **Revision.** *Revise methods of judging distance.*

Introduction.

98. **Explain.** When a target is indicated, the soldier has to be able to recognise it quickly so that it can be effectively engaged. Also, on occasions, when he alone has seen the target, he has to be able to indicate it to the remainder of the section.

Arc of Fire

99. **Explain and demonstrate.** It is easier to recognise a target if the area of ground in which it is likely to be is known; such an area of ground is called an 'Arc of Fire'. An arc of fire is indicated in the following sequence:

- a. *The Axis.* i.e., the middle of the arc.
- b. *The Left and Right of Arc.*
- c. *Reference Points (prominent objects).* Which should be as permanent as possible, woods, mounds, etc, a reasonable distance apart and easy to identify. A specific point of the object is nominated and given a name and range, i.e., "Mound—bottom left corner—to be known as 'mound'— range 400".

100. **Confirm by practice.** (*Indicate the arc of fire to be used throughout the lesson*).

Methods of Indication.

101. **Direct Method.** *Explain and demonstrate.* This method is used to indicate obvious targets. The range, where to look and a description of the target are given. Terms used for where to look are (*see Fig 12*):

- a. 'Axis of arc', for targets on or very near the axis.
- b. 'Left' or 'Right', for targets 1600 mils (90 degrees) from the axis.
- c. 'Slightly', 'quarter', 'half' or 'three quarters' and 'Left' or 'right', for targets between the axis and 'Left' or 'right'.

102. **Confirm by practice.**

103. **Reference Points.** *Explain and demonstrate.* To indicate less obvious targets, a reference point may be used together with the direct method and perhaps the words "above" or "below" as well e.g.,

- a. "300—copse (reference point)—slightly right—small bush (the target)".
- b. "200—copse (reference point)—slightly right and below—gate (the target)".

104. **Confirm by practice.**

105. **Clock Ray.** *Explain and demonstrate.* To indicate more difficult targets a reference point together with a clock ray is used. During indication it is imagined that there is a clock face standing up on the landscape with its centre on the reference point. To

RESTRICTED

indicate a target (*see* Fig. 13) the range, the reference point and whether the target is to the left or right of it and the appropriate hour on the clock face are given. e.g.,

“300—mound—right—4 o'clock—small bush”.

106. *Confirm by practice.*

107. **Tracer.** *Explain.* To indicate an extremely difficult target or to indicate a target to a tank, tracer ammunition is a useful aid. The range and area of the target is indicated, tracer is fired and the strike is used as a reference point. e.g.,

“200—half right—watch this tracer . . . etc”.

108. **Hand Angles.** (*see* Fig 14) *Explain.* Difficult targets at longer ranges may be indicated by using a reference point together with a hand angle e.g., “300—copse—left 50 mils”. As a guide, with the left arm outstretched from the shoulder and one eye closed:

- a. The thickness of one finger subtends approximately 20 mils.
- b. The thickness of two fingers subtends approximately 40 mils.
- c. First two knuckles of the closed fist subtend approximately 50 mils.
- d. Closed fist (without the thumb) subtends approximately 150 mils.

109. *Confirm by practice.*

110. **Binoculars.** (*see* Fig 15) *Explain.* The binocular's graticules are spaced at intervals of approximately 10 mils across a field of view of about 80 mils and these may be used when appropriate to assist in indication, e.g.,

“300—copse—left—30 mils (or left three graticules)”.

111. *Confirm by practice.*

Conclusion

112. **End of Lesson Drill:**

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice.*
- c. *Normal safety precautions.*
- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) The importance of clear indication.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

LESSON 8.—REACTION TO FIRE CONTROL ORDERS

A. INSTRUCTOR'S NOTES

113. **Aim.** *To teach what to do when given a fire control order.*

114. **Timings.** *One 40 minute period.*

115. **Method.** *A basic instructional indoor or outdoor period.*

116. **Stores:**

Rifles	1 per soldier
Chalkboard or drops	2 (see paragraph 117.a.)
Landscape targets	3 (indoors only)

117. **Preparation:**

a. *Prepare a chalkboard/drops to include the following details:*

(1) *SEQUENCE OF A FIRE CONTROL ORDER*

GROUP

RANGE

INDICATION

TYPE OF FIRE

(2) *TYPES OF FIRE CONTROL ORDER*

FULL

BRIEF

DELAYED

INDIVIDUAL

b. *Select arc of fire and reference points.*

c. *Prepare at least four fire control orders of each type using various methods of indication.*

118. **Miscellaneous:**

a. *Check that the targets indicated have been recognized correctly and encourage the use of the word 'Again' if they have not.*

b. *When practising the squad in each type of fire control order, check after each stage that their actions are correct. Order "Stop" on completion of each engagement.*

B. CONDUCT OF THE LESSON

Preliminaries

119. **Safety Precautions.** *Normal.*

120. **Revision.** *Number the squad. Indicate arc of fire. Revise recognition of targets.*

RESTRICTED

Introduction

121. *Explain.* A fire control order is given so that the soldier can recognise the target and fire at it effectively. It is important that the soldier knows how to react to the fire control order sequence.

Sequence of a Fire Control Order

122. *Explain using chalkboard or drop (see paragraph 117. a. (1)).* A fire control order is given in a definite sequence. The word 'GRIT' helps in remembering the sequence:

- a. **GROUP.** Tells who is being addressed i.e., "Gungroup", "Section", "No. 2 rifleman", etc.
- b. **RANGE.** Tells how far away to look for the target and the setting required on the sights. Rifle optic sights remain at the lowest setting and rifle iron sights remain at 300 for targets up to 300 metres away.
- c. **INDICATION.** Tells in which direction to look and what to look for.
- d. **TYPE of FIRE.** Tells whether rapid fire is required and whether the weapon is to fire in single rounds or bursts.
- e. The order is completed with the command "Fire".

123. *Confirm by questions.*

Types of Fire Control Orders

124. *Explain and demonstrate using a chalkboard or drop (see paragraph 117. a. (2)).* There are four basic types of fire control orders to cater for battle situations:

- a. **FULL.** This is given if there is sufficient time, e.g., "Gunner—400—ruined house—bottom left corner—fire".
- b. **BRIEF.** This is given when there is little time and the target is obvious, e.g., "Section—quarter left—rapid—fire".
- c. **DELAYED.** This is used when the movements of friendly forces or of the enemy are known or can be guessed. The order "Fire" is delayed until the right moment, e.g., No 5. Section—300—farmhouse immediately below—enemy in the hedgerow—No 6. Section is moving through the copse on our right. We will cover their advance when they get to the open ground.—rapid—await my order". Then when No 6. Section reaches the open ground. "Fire".
- d. **INDIVIDUAL.** This is used when it is impracticable for the commander to control the time to open fire so he passes the responsibility to the individual(s) concerned, e.g., "Rifle group—200—slightly left—farm buildings—enemy in that area—watch and shoot".

125. *Confirm by questions and practice (see paragraph 118. b.)*

RESTRICTED

Conclusion

126. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions.*
- c. *Normal safety precautions.*
- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) The importance of implicitly obeying the order as given.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED



Fig 16. The 'monkey run' without weapon



Fig 17. The 'monkey run' with weapon

RESTRICTED

RESTRICTED



Fig 18. The 'leopard crawl' without weapon



Fig 19. The 'leopard crawl' with weapon (a)

RESTRICTED

RESTRICTED



Fig 20. The 'leopard crawl' with weapon (b)



Fig 21. The 'leopard crawl' with GPMG

RESTRICTED

RESTRICTED



Fig 22. The 'roll' without weapon



Fig 23. The 'roll' with weapon

RESTRICTED

RESTRICTED



Fig 24. The 'walk'

1-35

RESTRICTED

RESTRICTED



Fig 25. The 'side crawl'



Fig 26. The 'knee crawl'

1-36

RESTRICTED

RESTRICTED

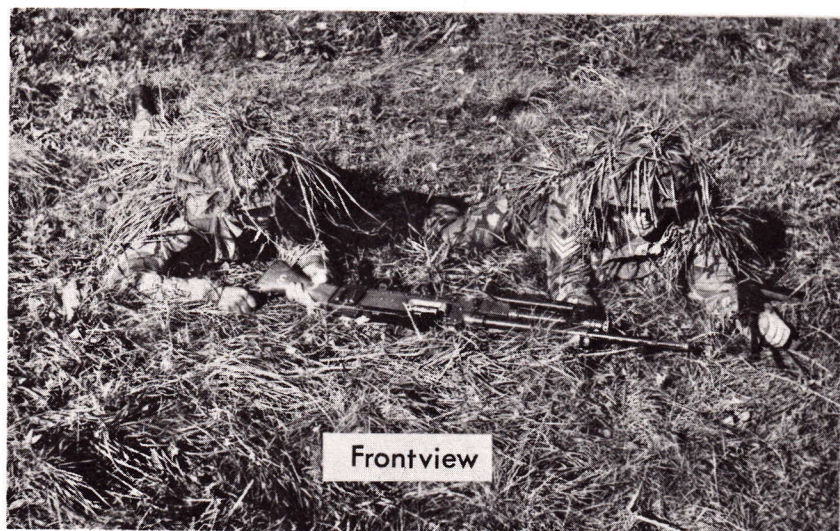


Fig 27. Combined 'leopard crawl'

1-37

RESTRICTED

RESTRICTED

1-38

RESTRICTED

RESTRICTED

LESSON 9.—MOVING WITH OR WITHOUT WEAPONS

A. INSTRUCTOR'S NOTES

127. *Aim.* To teach how to maintain concealment when moving with or without weapons.
128. *Timings.* Two 40 minute periods.
129. *Method.* A basic instructional outdoor period.
130. *Stores:*
- | | |
|-------------------------------|---------------------------------|
| <i>Personal weapons</i> | <i>1 per soldier</i> |
| <i>GPMG with sling fitted</i> | <i>1 (minimum requirement)</i> |
| <i>Drill rounds (belted)</i> | <i>15 (minimum requirement)</i> |
131. *Preparation:*
- Reconnoitre the training area and select an area of ground for the demonstration and practice of each type of movement.*
 - For advanced practice, select an arc for 'movers' and positions for 'observers'.*
132. *Miscellaneous:*
- Practise the squad as a whole then divide them into two groups, 'movers' and 'observers'. Use the observers to criticise the 'movers'.*
 - If absolutely necessary, a rifle may be used in lieu of a GPMG to practise methods of movement in pairs.*

B. CONDUCT OF THE LESSON

Preliminaries

133. *Safety Precautions. Normal.*

Introduction

135. *Explain.* It is important that each soldier knows how to combine the art of concealment with movement. Different methods of movement provide concealment for different types of cover and these can be used by the soldier when moving with or without weapons.

Methods of Movement (Individual)

136. *The Monkey Run* (see Fig 16). *Explain and demonstrate:*
- The monkey run is crawling on hands and knees and is useful when moving behind low cover.

RESTRICTED

- b. Movement can be quite fast but the faster the movement, the more the noise.
 - c. To reduce noise to a minimum put the hands down in a place that is free of twigs or anything which might crack, and then move the knees forward to the position where the hands have been.
 - d. Keep the buttocks and head low but observe whilst advancing.
 - e. If carrying a weapon (see Fig 17), hold it at the point of balance with one hand and ensure that no dirt gets into the muzzle.
137. *Confirm by practice.*
138. **The Leopard Crawl** (see Fig 18). *Explain and demonstrate:*
- a. The leopard crawl is crawling on the elbows and the inside of the knees. It is useful when moving behind very low cover.
 - b. Movement is achieved by moving alternative elbows and knees; the body is rolled slightly as each knee is bent. The same effect can be achieved by trailing one leg and using only one knee.
 - c. Keep the heels, head, body and elbows low down but observe whilst advancing.
 - d. If carrying a rifle, hold it either by the butt and the handguard or by the front of the sling with the rifle rested on the arm and the muzzle forward. (see Figs 19 and 20).
 - e. If carrying a GPMG, hold it by the small of the butt and the folded bipod legs. Hold the gun either on its side with the cocking handle up (see Fig 21) or, if there is a danger of the belt becoming dislodged, in an upright position. Use either the normal leopard crawl or push the gun forward as far as possible with both hands then use the knees, in the leopard crawl position, to move the body forward.
139. *Confirm by practice.*
140. **The Roll** (see Figs 22 and 23). *Explain and demonstrate.:*
- a. The roll is rolling with arms and weapons close into the side.
 - b. It is a very quick method of moving away from a position when observed by the enemy.
141. *Confirm by practice.*
142. **The Walk** (see Fig 24). *Explain and demonstrate:*
- a. Hold the rifle ready in the alert position and advance slowly.
 - b. To be quiet on hard ground, put the edge of the sole of the boot down first. Maintain balance by keeping the knees slightly bent.
143. *Confirm by practice.*
144. **The Side Crawl** (see Fig 25). *Explain and demonstrate:*
- a. The side crawl is used with the GPMG.

RESTRICTED

- b. Lie on the left side, hold the gun by the lowered carrying handle, and rest the gun on the left leg. Push forward using the right foot and left elbow.

145. *Confirm by practice.*

146. ***The Knee Crawl.*** (see Fig 26). *Explain and demonstrate:*

- a. The knee crawl can be used with the GPMG when moving behind waist high cover.
- b. Kneel on one knee. Hold the gun, carrying handle upright, in one hand close to the other knee and rest the thumb on the knee to take some of the weight of the gun off the arm. Put the clenched fist of the other hand flat on the ground.
- c. To advance, move the clenched fist and forward leg together, then bring the other leg up to them and so on.

147. *Confirm by practice.*

Methods of Movement (In Pairs)

148. ***The Combined Leopard Crawl*** (see Fig 27). *Explain and demonstrate:*

- a. The two gun numbers lie side by side with the No 2 slightly in front. The gunner holds the small of the butt with his left hand. The No 2 holds the bipod with his right hand. The gun is kept pointing forward.
- b. To move:
 - (1) Both men leopard crawl as with a rifle but their inside legs and their outside legs keep step, or
 - (2) Both men crawl forward as far as they can without letting go of the gun, and then lift the gun as far forward as they can and so on.
- c. The movements and actions may be carried out with the gun numbers level with each other. Using this method it takes slightly longer to get the gun into action.

149. *Confirm by practice.*

Conclusion

150. ***End of Lesson Drill:***

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice.*
- c. *Normal safety precautions.*
- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) The importance of selecting the best method of movement for the type of cover available.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

LESSON 10—ELEMENTARY OBSTACLE CROSSING

A. INSTRUCTOR'S NOTES

151. **Aim.** *To teach how to cross obstacles, as individuals or as members of a fire section.*

152. **Timings.** *One 40 minute period.*

153. **Method.** *A basic instructional outdoor period.*

154. **Stores:**

Rifle with sling	1 per soldier
GPMG with sling	1
Drill rounds (belted)	15
Medical bag	1
Wire cutters	1
Sacking or similar material	As required

155. **Preparation:**

- a. *Ensure that a varied selection of obstacles is available on the training area.*
- b. *If possible, discuss each obstacle in detail with a PT instructor.*

156. **Miscellaneous:**

- a. *Explain, demonstrate and practise the squad in the method of crossing each obstacle in turn.*
- b. *If possible during demonstrations and practice, obtain the assistance of a PT instructor.*
- c. *It is important that practice is progressive, i.e., individual, pairs and groups of more than two.*
- d. *Ensure that each soldier, having crossed an obstacle, uses the correct method of movement to take up a fire position and then observes.*

B. CONDUCT OF THE LESSON

Preliminaries

157. **Safety Precautions.** *Normal.*

158. **Revision.** *Revise methods of movement.*

Introduction

159. **Explain.** The quicker that obstacles are crossed in battle the less likely are the enemy to inflict casualties. It is important that the soldier knows the best method of crossing, whether as an individual or as a member of a section.

RESTRICTED

Method of Crossing Obstacles

160. *Explain, demonstrate and practice (see paragraph 156, a.):*

- a. *Gates and Fences.* Crawl under if possible and if not, vault over them.
- b. *Walls.* Assist one another up and, keeping flat, roll across the top. Do not drop weapons over the wall.
- c. *Ditches, Streams, Hedges and Gaps.* As these are likely to be covered by enemy fire, cross them as quickly as possible.
- d. *Wire:*
 - (1) Crawl under if possible.
 - (2) If wire has to be cut, place sacking over the wire to reduce noise and have a soldier to hold both sides of the cut to prevent the wire from flying noisily apart and possibly causing injury.
- e. When in close contact with the enemy, covering fire is necessary during obstacle crossing.

Conclusion

161. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice.*
- c. *Normal safety precautions.*
- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) The importance of taking up a fire position and observing when an obstacle has been crossed.
 - (2) The importance of covering fire when in close contact with the enemy.
 - (3) A forecast of the squad's next lesson in this subject.

RESTRICTED

LESSON 11—SELECTING A ROUTE ACROSS COUNTRY

A. INSTRUCTOR'S NOTES

162. **Aim.** *To teach how to select a route across country.*

163. **Timings.** *Two 40 minute periods.*

164. **Method.** *A basic outdoor instructional period.*

165. **Stores:**

*Notebook and pencil
Solution to problems*

*1 per soldier
1 (see paragraph 166.b.)*

166. **Preparation:**

a. *Reconnoitre the training area and select:*

(1) A start point and two objectives, one objective to be approximately 200 metres and the other approximately 600 metres from the start point.

(2) A number of distant landmarks to assist in maintaining direction to each objective.

b. *Prepare a solution for the best route between the start point and each of the objectives.*

167. **Miscellaneous:**

a. *Practice is best conducted in the following manner:*

(1) Divide the squad into three groups.

(2) Indicate the objective and the limits within which the route is to be planned.

(3) Indicate the enemy position.

(4) Give a time limit for planning the route.

(5) Select and discuss one group's plan with the whole squad.

(6) Follow the route and discuss each bound in turn from the enemy's point of view.

b. *Depending on the standard of the squad, the map, air photograph and compass may be used as aids to maintaining direction. Information on these subjects is contained in Manual of Map Reading 1973 (Army Code No. 70947).*

B. CONDUCT OF THE LESSON

Preliminaries

168. **Safety Precautions.** *Nil.*

169. **Revision.** *Nil. Indicate the start point and each objective.*

Introduction

170. **Explain.** *Before moving from one location to another in battle, the soldier has to select a route which best serves his purpose.*

RESTRICTED

Selecting a Route and Maintaining Direction

171. *Explain:*

- a. The ideal route is one on which, all the way:
 - (1) There are places to observe without being seen.
 - (2) There are good fire positions.
 - (3) There is cover from enemy view.
 - (4) There is cover from enemy fire.
 - (5) There are no obstacles to movement, i.e., open ground, marshland, dense woods, etc.
- b. Unfortunately, these advantages very seldom occur together; low ground is best for cover from enemy view and fire but high ground is best for observation and good fire positions. Thus the selection of a route from one point to another can only be made according to local circumstances and/or orders.
- c. When choosing a route, look carefully at the area and, subject to any orders received, decide on:
 - (1) Where to make for.
 - (2) The best way to get there, split into bounds.
 - (3) Where to run, walk or crawl. From this the time taken for the route can be estimated.
 - (4) Distant landmarks to help in maintaining direction.
- d. Move in bounds from one position of observation to another, choosing each route as taught. After each bound confirm direction from the distant landmarks.
- e. To assist in maintaining direction the following may also be used:
 - (1) Maps, air photographs and compass.
 - (2) The position of the sun.

Types of Cover

172. *Explain.* Points to note when selecting cover along the route are:

- a. *Dead Ground.* This is ground which cannot be seen from the enemy's position. Thus it provides cover from observation and direct fire but does not give protection from mortar or artillery fire.
- b. *Streambeds and Ditches.* These provide cover from view. They are, however, obvious approaches (as are tracks, roads and railway lines) and will normally be covered by enemy fixed lines of fire, tripflares, etc.
- c. *Hedges and Bushes.* These provide cover from view but no protection from direct fire. Isolated bushes and trees are obvious places to take cover and should therefore be avoided.
- d. *Woods.* These provide cover from observation from ground and air. The main danger is from enemy mortar and artillery fire.
- e. *Buildings and Walls.* Depending on their construction, the range of the weapon and its angle of fire certain buildings and walls will give protection against small arms fire and HE.

RESTRICTED

f. *Farmland.* Avoid if possible going near farm animals; they are generally inquisitive and thus give away the position.

173. *Confirm by questions and practice (see paragraph 167.a.).*

Conclusion

174. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice if time permits.*
- c. *Summary. To include the following:*
 - (1) The importance of a sound knowledge of the advantages and limitations of types of cover.
 - (2) A forecast of the squad's next lesson on this subject.

RESTRICTED

LESSON 12—STALKING

A. INSTRUCTOR'S NOTES

175. *Aim.* To teach how to stalk.

176. *Timings.* Two 40 minute periods.

177. *Method.* A basic instructional outdoor period.

178. *Stores:*

Rifles

1 per soldier

Helmets steel

1 per soldier

179. *Preparation:*

a. Reconnoitre the training area and select a start point and one objective approximately 300 metres distant.

b. Prepare a solution for the best fire position against each of the enemy locations.

180. *Miscellaneous:*

a. The squad should have been taught Lesson 11. Selecting a route before this period.

b. The practice is best conducted as follows:

(1) Divide the squad into two groups. Send one group to act as standing enemy on the distant objective and the other group to act as stalkers from the start point.

(2) Give a time limit for the stalkers to plan and conduct their stalk.

(3) Discuss, on the objective, the success or failure of each stalker.

(4) Change groups around. Send one group as enemy to the original start point and the other to start their stalk from the objective.

c. The instructor should follow behind the stalkers and be in such a position as to observe faults in movement, fire positions, etc., without betraying the stalkers' position to the enemy.

B. CONDUCT OF THE LESSON

Preliminaries

181. *Safety Precautions.* Normal.

182. *Revision.* Question the squad on selecting a route across country and the points to note about different types of cover (see Lesson 11). Indicate the area to be used and allow the squad to camouflage.

Introduction

183. *Explain.* The object of stalking is for the soldier to move, unseen, to a fire position within such range of his target to ensure a first round kill.

RESTRICTED

Planning of, and Actions During a Stalk

184. *Explain.* Before a stalk takes place, the following information must be known and committed to memory:

- a. *Enemy's Position.* Locate the exact position of the enemy by observation paying particular attention to nearby features and landmarks.
- b. *Fire Position.* Decide upon an area which appears to present the best possible fire position from which to kill the enemy. The distance from the enemy will depend on the killing weapon being used.
- c. *Stalking.* Select a line of advance to the selected fire position area as previously taught, and, when moving from one bound to another pay particular attention to the following:
 - (1) *Personal camouflage.* Changes in local cover should be noted and any necessary alterations made to personal camouflage.
 - (2) *Direction.* Related to distant landmarks.
 - (3) *Alertness.* Any relaxation could lead to carelessness.
 - (4) *Observation.* Observe with care at frequent intervals, especially at the start and end of each bound.
 - (5) *Exposure.* If surprised or exposed, instinctive reaction is necessary either to 'freeze' or to move quickly to the nearest cover, away from the point of exposure.
 - (6) *Risks.* Take advantage of any local disturbances or distractions (gunfire, aircraft, etc.,) which enable quicker movement than would otherwise be possible. This involves a degree of risk and should not be attempted when close to the enemy.
 - (7) *Disturbed Wildlife.* This can draw the enemy attention to the area of the approach.

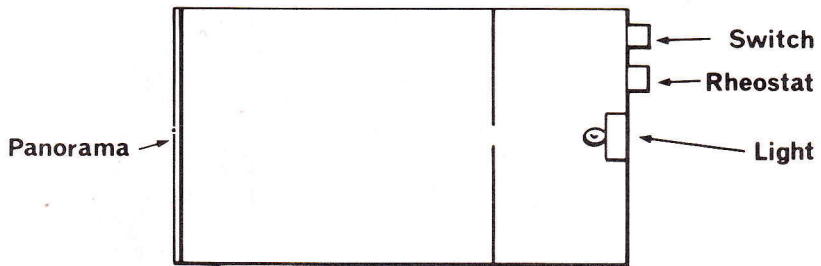
185. *Confirm by practice* (see paragraph 180.b.).

Conclusion

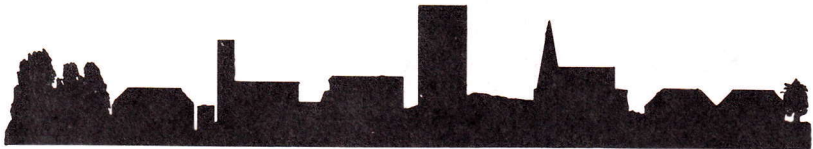
186. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions.*
- c. *Normal safety precautions.*
- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) The main faults noted.
 - (2) The importance of planning for a stalk.
 - (3) A forecast of the squad's next lesson in this subject.

RESTRICTED



Plan of Box



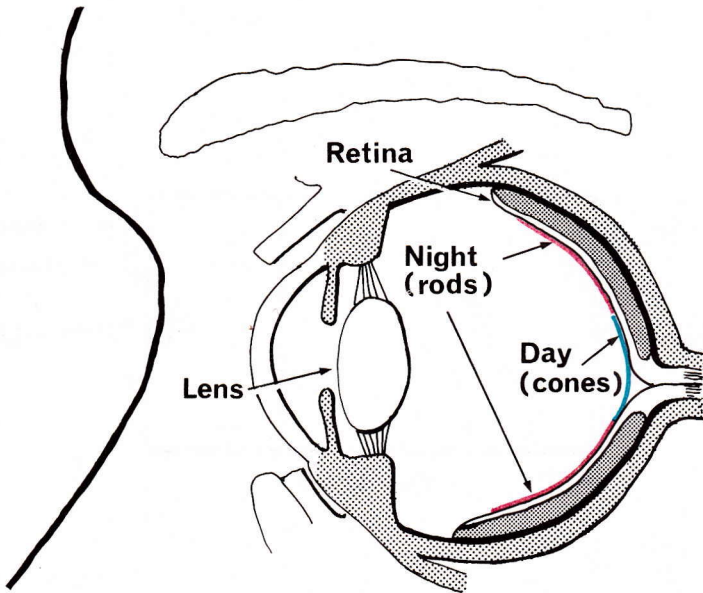
Example of Panorama



Fig 28. The panorama box

RESTRICTED

RESTRICTED



Section of the human eye

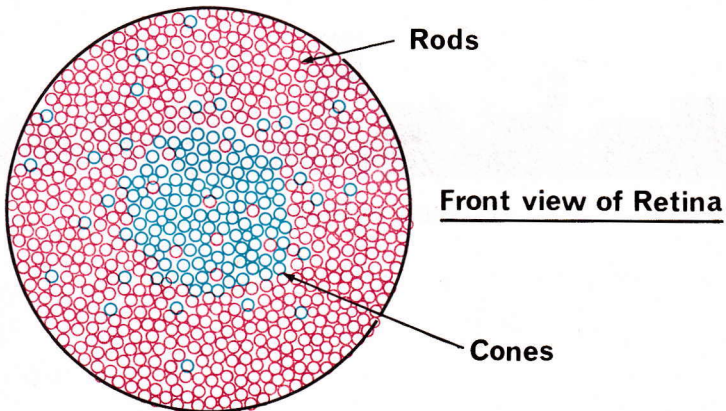


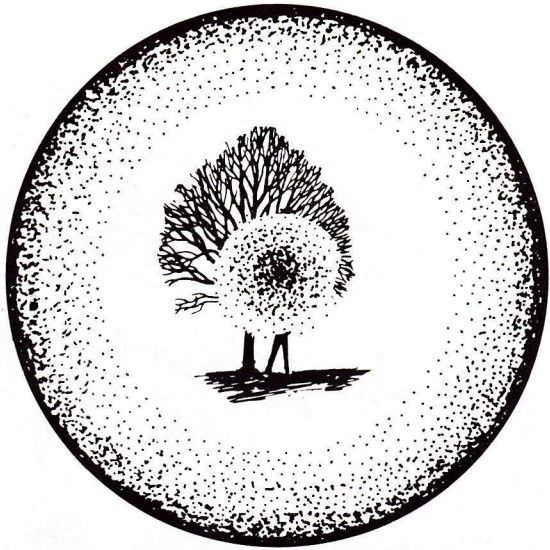
Fig 29. The human eye

1-50

RESTRICTED

RESTRICTED

**Direct vision -
WRONG**



**Off centre vision -
RIGHT**



Fig 30. Off centre vision

1-51

RESTRICTED

RESTRICTED

Path of Search

Area Searched



Fig 31. The figure of eight technique

1-52

RESTRICTED

RESTRICTED

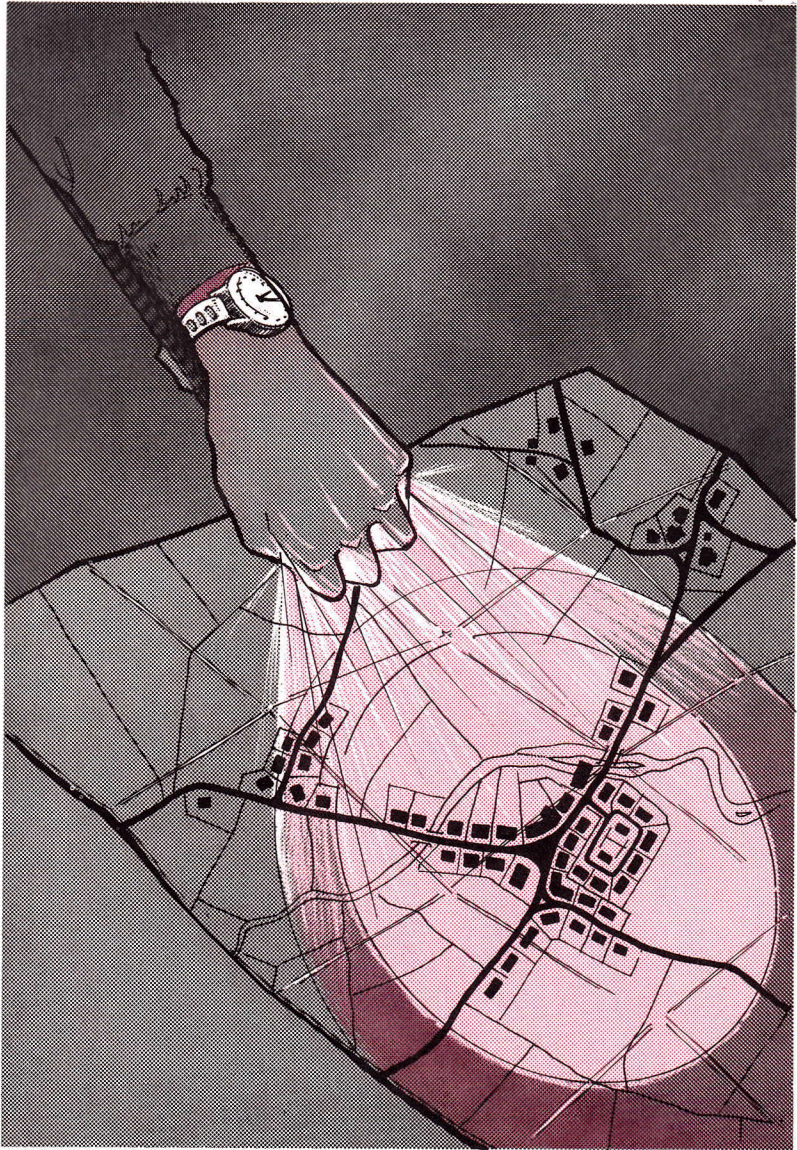


Fig 32. Reading a map at night

1-53

RESTRICTED

RESTRICTED

1-54

RESTRICTED

RESTRICTED

LESSON 13—INTRODUCTION TO NIGHT TRAINING

A. INSTRUCTOR'S NOTES

187. **Aim.** *To teach the differences between day and night vision.*

188. **Timings.** *One 40 minute period.*

189. **Method.** *A basic instructional period to be taught in a darkened room in which normal lighting has been replaced with red light bulbs of 60 watts or less.*

190. **Stores:**

Torch (showing a pin-hole of red light)	1
Small stand (to hold torch)	1
Panorama box (see Fig 28)	1
Chalkboard or drops	1
Yellow and red chalk	As required
Lectern with red reading light	1

191. **Preparation.** *Prepare a chalkboard or drop of the human eye (see Fig 29):*

- a. *If using a chalkboard, yellow or red chalk shows up well under red light.*
- b. *Black ink only should be used if using white paper for the drop.*

192. **Miscellaneous:**

- a. *At the back of the panorama box there is a 6 watt bulb connected in series to a 10 ohm rheostat and a battery all of which is enclosed, except for a pin hole, at the front. Against the front of the box is a panorama. The light throws silhouettes of the panorama on to a wall 5-7 metres away.*
- b. *To practise protection of night adaptation, order the squad to cover one eye and, keeping it covered, send them out into daylight for a minute or two. When the squad returns do not allow them to uncover their protected eye until they have discovered that their unprotected eye has lost its night adaptation. By switching the red lights on and off, show the squad that red light does not affect night vision.*
- c. *It is important that soldiers equipped with optic sights are encouraged to use them for scanning purposes.*

B. CONDUCT OF THE LESSON

Preliminaries

193. **Safety Precautions.** *Nil.*

194. **Revision.** *Nil. (Set the rheostat so that the panorama will become visible after four to five minutes. Switch off the room lights).*

RESTRICTED

Introduction

195. *Explain.* In battle, the soldier will have to move and fight by night. He is required to take part in patrols or act as a sentry and to do this successfully, he must understand and be practised in the techniques of observing at night. This has to be learnt as the eye does not work in the same way at night as it does during the day. Since entering the room there has been a panorama on the wall, which could not be seen at first, because the eyes were not adapted to darkness. To understand why this is so, involves a knowledge of the human eye.

The Human Eye

196. *Switch on the red lights and explain, using a prepared chalkboard or drop (see Fig 29).*

- a. The retina comprises of two sets of cells. Cones, mostly in the centre are used in daylight, and rods grouped around the centre cones, are used during the hours of darkness.
- b. The cones (day cells) need strong light to enable the eye to see. They will work in moonlight but under worse conditions of light they are useless.
- c. The rods (night cells) are very sensitive to light and will function when the cones no longer do so. The rods are not normally used in daylight, since when looking directly at something by day the light entering the eye strikes the cones only.
- d. Everyone has the ability to see in the dark whether their day vision is perfect or not. However, constant practice greatly improves night vision.

197. *Confirm by questions.*

Night Adaptation

198. *Explain:*

- a. Night adaptation is the change over from seeing with day cells in strong light to seeing with the night cells in darkness. It is a slow process for which there is no short cut. The night cells can take about 30–45 minutes to become completely efficient. An alternative to sitting in darkness for half an hour waiting for this adaptation, is to remain under red light for the same period of time. This will produce almost complete adaptation and allows work to be done during the waiting period.
- b. The night cells are weak and tire quickly. Once adaptation has taken place it is not possible to stare at an object for longer than 4–10 seconds before the vision becomes blurred. The angle of sight must be changed accordingly to allow the night cells to rest and recover.
- c. When night adapted, colours fade and become shades of grey only and movement is quickly spotted.

199. *Confirm by questions.*

RESTRICTED

Off Centre Vision and Scanning at Night

200. *Explain.* Because of the position of the night cells the following rules are important in darkness (see Fig 30):

- a. Never look directly at what is required to be seen or a small or dim object will not be seen at all.
- b. The eye should 'aim off' from the object about a fist's width at arms length (100–150 mils). Only by experiment can the soldier find out which direction is most suitable for his 'aim off' i.e., above, below or to one side of the object. This technique is called 'off centre vision'. It is important that the soldier resists the temptation of a direct look 'just to make sure'.
- c. When scanning at night, scan slowly by moving the eyes in a series of separate movements and rest for ten seconds every two minutes. If an object is suspected, either use the optic sight or apply off centre vision in a figure of eight technique (see Fig 31) for a few seconds. Once the object is identified, it is possible to look at it for a few seconds before its image disappears. This is a useful aid to shooting at night.
- d. It is of great benefit to be lower than the object or area being scanned thus putting it in a silhouette position.

201. *Confirm by questions.* Switch off the red lights. (*The panorama should now be visible*).

Protection of Night Adaptation

202. *Explain.* Any bright light will spoil night adaptation. It is important that the soldier instinctively closes, or covers one eye when faced with any light at night. In addition he should:

- a. Avoid looking at any bright light unnecessarily.
- b. Shield the eyes with his hand from parachute flares, spotlights or headlights. By doing so it is possible to see objects beyond them more easily and also protects the night adaptation.
- c. Avoid waving torches about as not everybody will be quick enough to close their eyes in order to avoid being dazzled.
- d. When using torches to map read, put the hand over the glass and use the fingers to limit both the area illuminated and the brightness of the light (see Fig 32). Keep one eye shut and the time spent on reading the map to a minimum.

203. *Confirm by practice* (see paragraph 192.b.). Switch off all lights including the panorama box.

Staring

204. *Explain and demonstrate by switching on the red torch mounted on the stand facing the squad.* It is important to realise that when staring at a stationary light or prominent object in an otherwise black scene, the object may seem to start moving. This happens

RESTRICTED

because the eye has no bearings on which to check the exact position. This can be prevented by 'placing' the object against something else such as a finger at arm's length.

205. *Confirm by practice. (The squad should use a finger to confirm).*

Conclusion

206. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice.*
- c. *Pack kit.*
- d. *Summary. To include the following:*
 - (1) The use of red light in awaiting night adaptation.
 - (2) The importance of off centre vision and protection of the eyes.
 - (3) A forecast of the squad's next lesson in this subject.

RESTRICTED

LESSON 14—NIGHT TRAINING, USE OF THE TRAINING THEATRE

A. INSTRUCTOR'S NOTES

207. **Aim.** *To demonstrate the use of the training theatre for night training.*
208. **Timings.** *One 40 minute period.*
209. **Method.** *A demonstration in the training theatre best suited for NCO's.*
210. **Stores:**

Rifles	1
Standing dummies	2
Piece of red cord	1
50p coin	1
Common User Binoculars (CUB)	1 (minimum requirement)
Individual Weapon Sight (IWS)	1 (minimum requirement)
Assistants	As required (see paragraph 212.b.)

211. **Preparation:**

- a. *Reconnoitre the training theatre and:*
 - (1) *Check lighting systems.*
 - (2) *Position standing dummies at target end.*
- b. *Rehearse any demonstrations (see paragraph 212.a. and b.).*

212. **Miscellaneous:**

- a. *Soldiers should be fully familiar with the content of Lesson 13—Introduction to Night Training before this demonstration.*
- b. *During practice in night confidence, other examples may be also used, i.e., soldier walking, rattling mess tins, etc.*
- c. *During practice in use of aids for fault checking, use assistants to conduct some activity in the middle of the theatre.*
- d. *Further information about the Individual Weapon Sight (IWS) is contained in Infantry Training, Volume II, Skill at Arms (Individual Weapons), Pamphlet No. 7. The 7-62 mm Self Loading Rifle. Army Code No. 71012.*
- e. *Common User Binoculars (CUBs) were originally designed for night driving but have considerable application in other fields. They are normally mounted on a steel helmet and a small battery supplies the power to produce an electronic telescopic effect which enables the viewer to see any infra-red beam.*

B. CONDUCT OF THE LESSON

Preliminaries

213. **Safety Precautions.** *Normal.*

RESTRICTED

214. **Revision.** *Revise on the human eye, off centre vision, night adaptation and its protection (Lesson 13).*

Introduction

215. **Explain.** The best way to train the soldier in night fighting techniques is to do it in varying weather conditions over different types of terrain. The training theatre, however, provides a suitable environment in which to train the soldier in the basic night fighting techniques with the maximum amount of supervision and is best used during daylight in preparation for night work.

Artificial Lighting

216. **Explain and demonstrate:**

a. The night light effect is produced by overhead luminescent panels all the way down the theatre. These panels throw a glow against the roof. At the target end there are ground level panels which are used to silhouette the targets.

b. The lighting system is controlled by a rheostat. This is marked off in figures 1-10 which approximately represent:

- | | |
|--------------------|----------------------------------|
| (1) 10-9 | = half moon |
| (2) 8, 7, 6 | = quarter moon |
| (3) 5 | = less than quarter moon |
| (4) 4, 3 | = starlight |
| (5) 2 | = overcast starlight |
| (6) Less than 1.25 | = darker than overcast starlight |

c. To check that the light system is correct for night work raise the light level slightly, hold up an item with a red surface and lower the light slowly until the colour can no longer be determined by the squad.

d. Progressive training can be achieved by reducing the light level slightly on each instructional occasion.

217. **Confirm by questions and practice.**

Use in Training.

218. **Explain and demonstrate.** The following are some of the uses to which the lighting system can be used in addition to shooting practice:

a. **Reaction to Light.** The soldiers reaction to light, flares, etc, can be tested at any time by flickering the house lights.

b. **Night Adaptation.** The soldier can be shown how long night adaptation takes to return after being exposed to a 'flare' when both eyes are open. *Produce the flare effect . . . start counting when it 'goes out' and stop counting when the squad can see, with off centre vision, the silhouettes at the target end of the range. This usually takes 3-4 seconds and will show the squad that the closing of one eye is vital if they need to fire during this 'blind' period.*

RESTRICTED

c. *Night Confidence.* The soldier who is plunged into darkness for the first time tends to be confused and lacks confidence. He requires to be trained to use his senses of touch and hearing much more and to deduce as far as is possible what the objects or sounds represent. A simple illustration in early night training is to drop a 50p coin and ask "What is it?", then by touch "What value is it?" and, to prove night limitations, "Heads or tails?". This can be developed later by using pieces of military equipment for the soldier to recognise by sound or touch, i.e., cocking a weapon, issuing grenades, etc.

219. *Confirm by practice (see paragraph 212.b.).*

Aids to Fault Checking

220. *Explain and demonstrate.* Under any level of light the instructor can see only as much as the squad. However, to overcome this problem certain aids are available:

- a. *Common User Binocular (CUB).* By switching on the infra-red panels on the control box, the entire theatre is bathed in infra-red lighting which can not be seen with the naked eye. Excellent viewing can be done through CUBs.
- b. *IWS.* This sight allows excellent viewing in most conditions of night without any other source of light.

221. *Confirm by practice (see paragraph 212. c.).*

Conclusion

222. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice.*
- c. *Normal safety precautions.*
- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) The training theatre is complementary to, but not a substitute for outdoor night training.
 - (2) The limitations in its use are determined by the ingenuity of the instructor.
 - (3) A forecast of the squad's next lesson in this subject.

RESTRICTED

LESSON 15.—ELEMENTARY NIGHT MOVEMENT

A. INSTRUCTOR'S NOTES

223. **Aim.** To teach the soldier, in daylight, how to move at night and what to do when caught in the open by flares or very lights.

224. **Timings.** One 40 minute period.

225. **Method.** A basic instructional outdoor period.

226. **Stores:**

Rifles

GPMG

Chalkboard or drop

1 per soldier

As necessary (see paragraph
228.b.)

1

227. **Preparation:**

a. Prepare a chalkboard or drop to include the following:

MOVING AT NIGHT

Move silently

Stop—Scan—Listen (Frequently)

Use Shadows as Cover

Freeze at any Sound

b. Reconnoitre the training area and select an area on which to practise the squad best in the silent moving techniques.

228. Miscellaneous:

a. To practise the squad in each silent moving technique, form them into two ranks ten metres apart, both ranks facing in the same direction. The front rank sits down and each member of the rear rank advances in turn until heard by the soldiers in the front rank. Change round and repeat the practice.

b. Gunners can be included and practised as necessary.

B. CONDUCT OF THE LESSON

Preliminaries

229. *Safety Precautions. Normal.*

230. **Revision.** Question the squad on selecting a route (Lesson 11).

Introduction

231. **Explain.** The enemy will be alert at night. It is important therefore that the soldier knows how to move at night without being detected and what action to take if caught in unexpected flares or very lights.

RESTRICTED

Moving at Night.

232. *Explain and demonstrate (using the prepared chalkboard or drop):*

- a. At night more is heard than is seen, so silence is vital. To move silently at night, the soldier has to move slowly. Selection of routes across country is vital as the enemy may have surveillance equipment.
- b. Whether as an individual or as part of a patrol the following rules must be observed:
 - (1) Stop at frequent intervals and scan, using either the optic sight or off centre vision as taught, and listen. Get as low to the ground as possible and turn the ears in the direction of a sound. Opening the mouth half way will assist in picking up the direction of the sound.
 - (2) Make use of cover or shadows to avoid being silhouetted; if necessary lie down.
 - (3) If any suspicious noise is heard when moving, 'freeze', scan as taught listen slowly and silently lie down using cover if available.
- c. Move silently using:
 - (1) *The Ghost Walk*—Lift the leg high to avoid long grass and sweep it outwards. Feel gently with the toe for a safe place to put the foot down. Make sure that one foot is providing firm support before moving the other. Keep the knees slightly bent. Carry the weapon as normal.
 - (2) *The Cat Walk*—Crawl on hands and knees. Search the ground ahead for twigs with the right hand, hold the weapon in the other. Move the knees up to the right hand and search again.
 - (3) *The Kitten Crawl*—Lie on the stomach and search the ground ahead for twigs with the right hand. Lift the body on forearms and toes, press it forward and lower it to the ground. Hold the weapon in the left hand. This crawl is slow and tiring but is exceptionally quiet and is ideal when it is necessary to get very close to a known enemy position.

233. *Confirm by practice (see paragraph 228. a.).*

Reaction to Unexpected Lights

234. *Explain.* Both friendly forces and the enemy use flares and other devices to light up the battlefield at night. The soldier's reaction is determined by the type of cover available:

- a. Where there is little cover, it is usually best to lie down immediately.
- b. In close country, particularly jungle, it is best to 'freeze' as the enemy is liable to be fairly close, and noise or movement would be more easily recognised than an immobile object against a shadow background.
- c. If the soldier knows he has been spotted then he must get to cover, away from the source of light as quickly as possible.

235. *Confirm by practice.*

RESTRICTED

Conclusion

236. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice.*
- c. *Normal safety precautions.*
- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) The need for silence at night.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

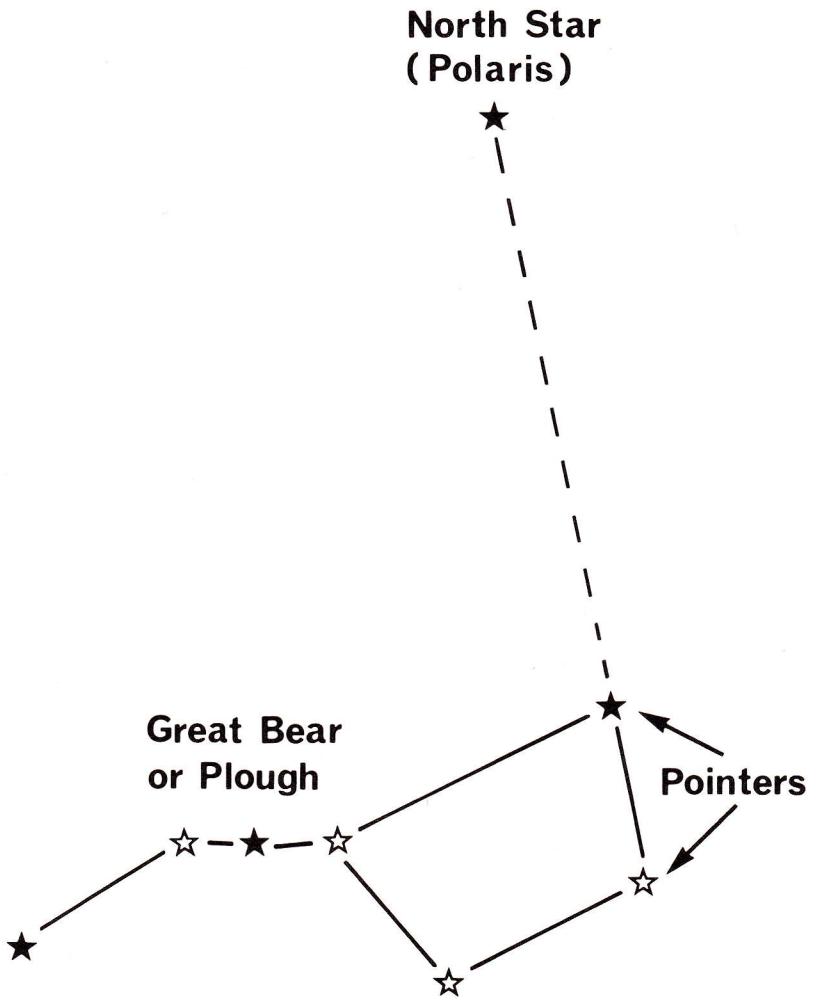


Fig 33.—Finding the North Star

1-65

RESTRICTED

RESTRICTED

1-66

RESTRICTED

RESTRICTED

LESSON 16.—KEEPING DIRECTION AT NIGHT

A. INSTRUCTOR'S NOTES

237. *Aim.* To teach how to keep direction at night.

238. *Timings.* Two 40 minute periods.

239. *Method.* A basic instructional period (see paragraph 242. a.), taught before dark and practised during the hours of darkness.

240. *Stores:*

Rifles	1 per soldier
Optic sights	As available
IWS	As available
North Star diagram	1
Chalkboard or drop	1 (see paragraph 241. b.)
Assistant	1

241. *Preparation:*

a. Reconnoitre the training area with the assistant and select a cross country route about 500 metres long, clear of roads and buildings, to an objective. The objective, at night, should not be visible until one is within 100 metres of it and it should then be unmistakable.

b. Prepare a chalkboard or drop to include the following details:

KEEPING DIRECTION AT NIGHT

Landmarks

Pacing

Optic Sights

Compass

Stars

Sketches

IWS

242. *Miscellaneous:*

a. Select only those sections essential for the standard of the squad under instruction. Methods of keeping direction are best explained before dark and practised during darkness.

b. Further information on the optic sight and the IWS is contained in Infantry Training, Volume II, Skill at Arms (Personal Weapons) Pamphlet No. 7. The 7-62 mm Self Loading Rifle, Army Code No. 71012.

c. To confirm by practice after dark:

(1) At the start point the assistant tells the squad the objective and its direction. He may or may not give a password. He then sets off each soldier at intervals.

(2) The instructor is at the objective to discuss each soldier's movement, aids used, etc.

RESTRICTED

(3) A final collective discussion is carried out.

- d. Soldiers are best practised individually in order to give them confidence in their own ability at night.

B. CONDUCT OF THE LESSON

Preliminaries

243. *Safety Precautions. Normal.*

244. *Revision. Revise maintaining a route across country by day (Lesson 11).*

Introduction

245. *Explain.* It is often difficult to keep direction at night. It is important therefore that the soldier is aware of the aids available to him and how to use them.

Methods of Keeping Direction

246. *Explain.* The following aids can be used either individually or combined:

- a. *Landmarks.* Ideally two prominent objects to the front are selected and are kept lined up in view. When one object alone is used, its position related to the objective is checked i.e., left of, in line with or right of. It is useful to have a landmark on the back view particularly if a return journey is necessary.
- b. *Pacing.* Individuals should memorize the number of paces they require to cover a known distance, e.g., 100 metres, and then compare the number required to cover the same distance in different vegetation and on various terrains. Small pebbles used as 100 metre counters are a useful aid to keeping a check on distance covered.
- c. *Optic Sight.* This provides, on average, a means of observing at least twice the Limit of Night Vision (LNV) and is also useful for viewing landmarks of both the forward and the back view.
- d. *Compass.* This is the most reliable aid and should be used in conjunction with a map and air photograph. Bearings are worked out and set by day. The bearing can be altered for each bound though when more than one bearing is needed, it is best to have a separate compass set for each one and marked unmistakably.
- e. *Stars.* These are useful when no suitable landmarks are available. The pointers of the Great Bear point to the North Star which is always almost directly north and therefore very reliable (see Fig 33). When selecting any other star as an aid to direction choose one so that as far as possible both the star and the ground are in vision at the same time. Because stars move, it is advisable to select a new one every 15 minutes.
- f. *Sketches.* These are copied from maps or air photographs during the day and should show all conspicuous features which would be visible at night, including any roads, hedges, etc., which would have to be crossed.

RESTRICTED

g. *IWS*. This is particularly useful under all conditions of night for observing the route.

247. *Confirm by questions and practice (see paragraph 242. c.).*

Conclusion

248. *End of lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice.*
- c. *Normal safety precautions.*
- d. *Pack kit.*
- e. *Summary. To include the following:*
 - (1) The importance of combining aids for maintaining direction.
 - (2) A forecast of the squad's next lesson on this subject.

RESTRICTED

LESSON 17.—ISSUING FIRE CONTROL ORDERS

A. INSTRUCTOR'S NOTES

249. **Aim.** To teach the terms involved in fire control and how to issue fire control orders.

250. **Timings.** One 40 minute period.

251. **Method.** A basic instructional period best suited for NCOs.

252. **Stores:**

Chalkboard or drop	2 (see paragraph 253. a.)
Landscape target	1 (if indoors)
Chalk (various colours)	As required
Pointer Staff	1

253. **Preparation:**

a. Prepare the chalkboards or drops to include the following:

(1) COMMON TERMS

Fire Unit
Fire Direction Orders
Fire Control Orders (FCO)
Arc of Fire
Axis of Arc
Field of Fire

(2) ISSUING FIRE CONTROL ORDERS

ASSESS: TARGET
WEAPON
TYPE OF FIRE
ISSUE: CLEAR
LOUD
AS AN ORDER
PAUSES

b. Prepare at least three Fire Control Orders of each type for use during demonstrations and squad practice. Ensure that all 'indications' are clear and concise.

254. **Miscellaneous.** The practice is best conducted as follows:

a. Depict a situation to the squad.

b. Nominate a fire unit commander and write down everything he says during his fire control order.

c. Discuss the fire control order with the squad paying particular attention to the following:

- (1) Was the sequence correct?
- (2) Was it the correct type for the situation?
- (3) Was the range accurate?

RESTRICTED

- (4) *Was the indication clear and concise?*
- (5) *Was the rate of fire correct for the situation?*

B. CONDUCT OF THE LESSON

Preliminaries

255. *Safety Precautions.* Nil.

256. *Revision.* Revise types of fire control orders (Lesson 8).

Introduction

257. *Explain.* A successful fire control order is one which brings controlled effective fire down on the enemy and takes them by surprise. It is essential that all NCOs know the meaning of the terms used in fire control and can decide quickly on the best type of fire control order to be used for each particular situation.

Meaning of Terms

258. *Explain using a chalkboard or drop (see paragraph 253. a. (1)):*

- a. *Fire Unit.* Any number of soldiers firing under one commander, the fire unit commander, e.g., a section and the section commander.
- b. *Fire Direction Orders.* Orders that a fire unit commander receives from his superior. They may include key ranges, special orders to withhold fire, when to open fire, at what targets and at what rates, etc.
- c. *Fire Control Orders (FCO).* Orders that the fire unit commander gives to control and direct the fire of his soldiers.
- d. *Arc of Fire.* The ground for which a fire unit is responsible and in which it engages targets.
- e. *Axis of Arc of Fire.* The approximate centre of the arc.
- f. *Field of Fire.* The area of ground on which an individual soldier or a fire unit can fire effectively.

259. *Confirm by questions.*

Issuing Fire Control Orders

260. *Indicate arc of fire and reference points. Explain and demonstrate as applicable using chalkboard or drop (see paragraph 253. a. (2)):*

- a. Before giving a fire control order, the following should be assessed:
 - (1) *The Target.* Is it near enough, clear enough and vulnerable enough to justify opening fire. Would it be better to wait for a more vulnerable target or more complete surprise.
 - (2) *Weapons.* Which of the weapons available would obtain best results.

RESTRICTED

(3) *Type of Fire.* Deliberate or rapid. Rapid fire is used to cover movement in the final stages of an assault. On other occasions, it is only justified if it will make surprise more complete or if the target is particularly vulnerable.

- b. Only give an Individual fire control order when it is impracticable to control the time of opening fire.
- c. When engaging a large target, direct fire at one point on it at a time.
- d. A fire control order should be given always:
 - C—Clearly, calmly and concisely
 - L—Loud enough for the soldier to hear it above the noise of battle
 - A—As an order
 - P—With pauses to allow for target acquisition, sights to be set if applicable.

261. *Confirm by questions and practice (see paragraph 254).*

Conclusion

262. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Confirm by questions and practice.*
- c. *Pack kit.*
- d. *Summary. To include the following:*
 - (1) The importance of assessing each situation before starting a fire control order.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

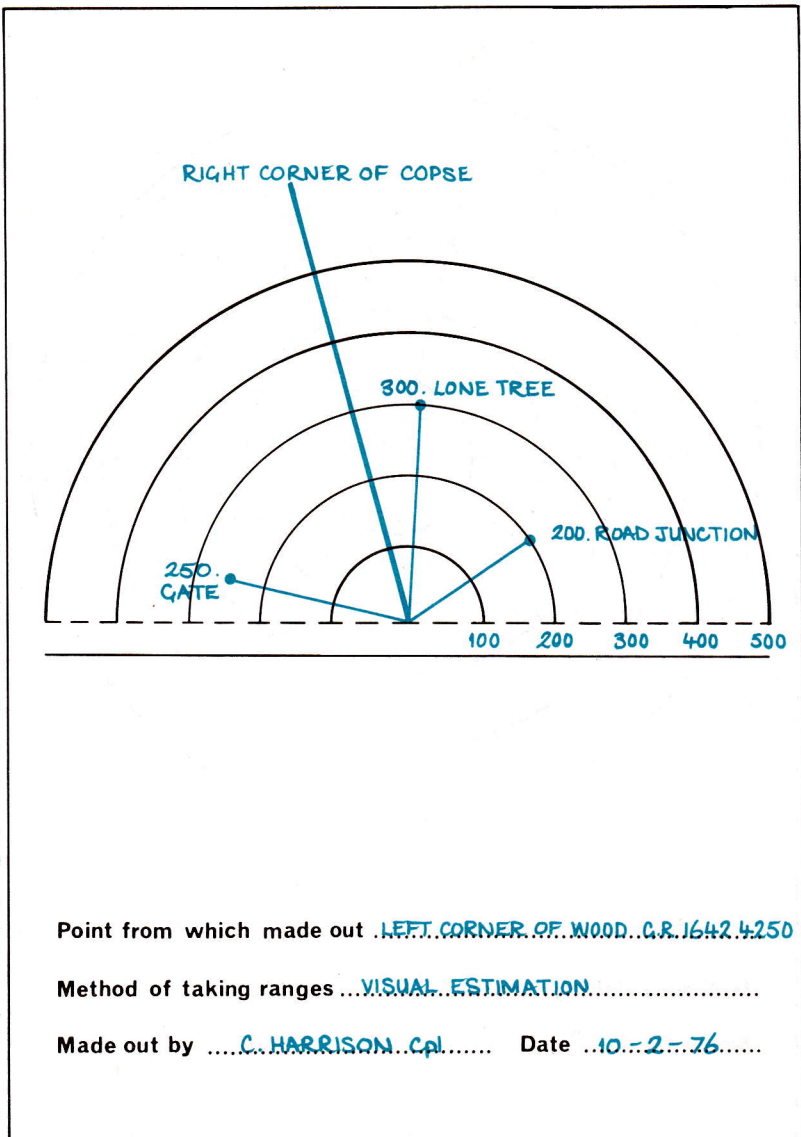


Fig 34.—Simple range card

1-73

RESTRICTED

RESTRICTED

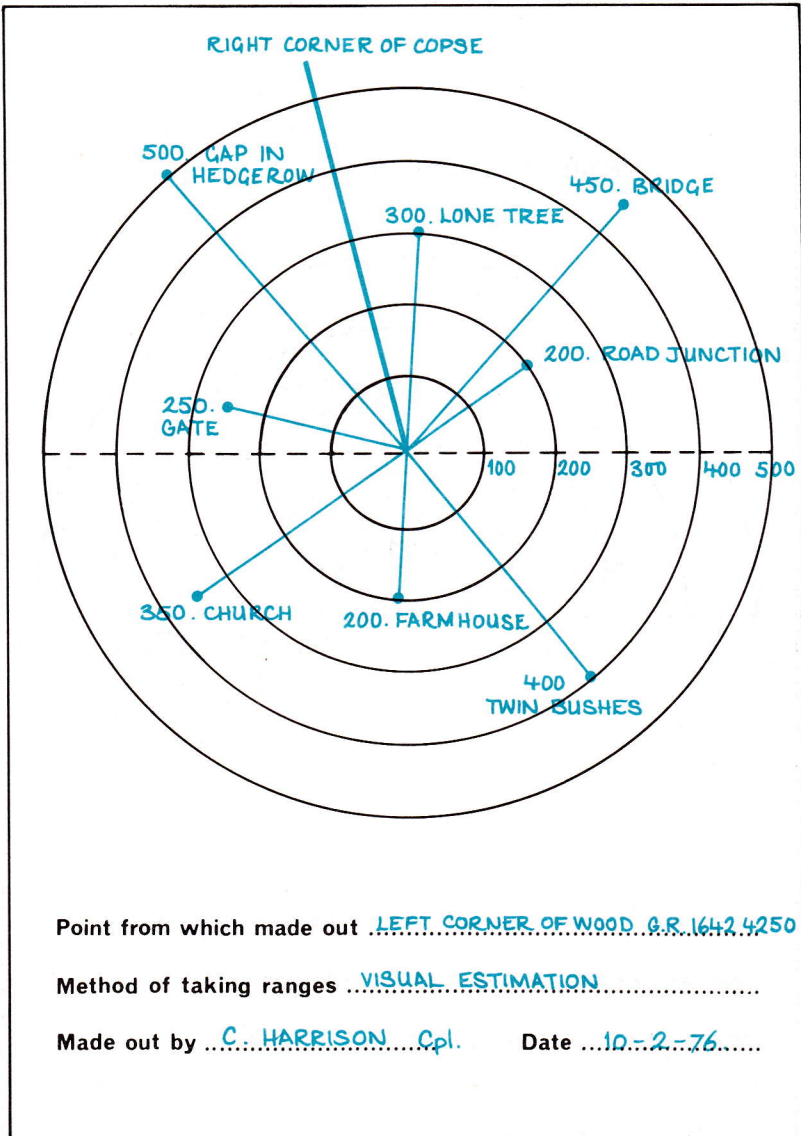


Fig 35.—Detailed range card

RESTRICTED

RESTRICTED

LESSON 18.—RANGE CARDS

A. INSTRUCTOR'S NOTES

263. *Aim.* To teach how to make and use a range card.

264. *Method.* A basic instructional period; the instruction indoors and squad practice out of doors.

265. *Stores:*

Blank range cards	3 per soldier
Pencils	1 per soldier
Compass	1 (minimum requirement)
Protractor	1 per soldier
Clipboards	1 per soldier

266. *Preparation.* Reconnoitre the training area and select:

- a. A central point for each of the squad.
- b. Arcs of fire, a setting ray, and objects to be plotted and their range.

267. *Miscellaneous.* During practice, ensure that ranges are accurately estimated.

B. CONDUCT OF THE LESSON

Preliminaries

268. *Safety Precautions.* Nil.

269. *Revision.* Nil.

270. *Explain.* A range card is a useful fire control aid and wherever possible, those responsible for control of fire should make one out for their arcs of fire. Whenever a position is to be occupied for a short time, a simple range card should be produced. If the position is to be occupied for a long time then a more detailed range card should be prepared. It is important that the soldier knows how each type is made.

Simple Range Card (see Fig 34)

271. *Explain and demonstrate using a blank range card.:*

- a. Describe accurately the central point from which the card is being made out.
- b. Put in the range that each circle is to represent.
- c. Choose one unmistakable object to the front; mark it on the card and draw a thick line to it. This is the setting ray.
- d. Decide on the few objects required to be recorded, possible enemy positions, obstacles, gaps in hedgerow, etc.

RESTRICTED

e. To record each object, fold the card, hold it level with the eye and line up the setting ray. Hold a pencil upright in the direction of the object to be recorded and mark the card. Draw a line from the central point to the object and to its correct range.

f. Against the position of each object, print a short description of how it looks to the naked eye and its range. Print horizontally.

g. Complete 'Method of obtaining ranges', sign and date the card.

272. *Confirm by practice.*

Detailed Range Card (see Fig 35)

273. *Explain and demonstrate.* This type of range card normally includes objects all around the central position.

a. Describe accurately the central point from which the card is made out.

b. Put in the range that each circle is to represent.

c. Draw the setting ray and decide on the objects to be recorded.

d. To record each object, take the bearing to the setting ray and the bearing to the object. This will give the angle between the two. i.e., setting ray 620 mils, object 840 mils—angle 220 mils. Use a protractor to mark this angle from the central point and draw a line to the correct range of the object.

e. Mark the position of the object with a small horizontal dash. write the range to the left of the dash and a brief description of the object to the right of the dash.

f. Complete 'method of obtaining ranges', sign and date the card.

Outdoor Practice

274. *Move to outdoor location. Indicate central point, arc of fire and objects to be plotted.*

275. *Confirm by practice.*

Conclusion

276. *End of Lesson Drill:*

a. *Questions from the squad on the entire lesson.*

b. *Confirm by questions and practice.*

c. *Pack kit.*

d. *Summary. To include the following:*

(1) The importance of accurately describing the central point of the card and the method of obtaining ranges.

(2) A forecast of the squad's next lesson in this subject.

277. to 300. *Reserved.*

RESTRICTED

CHAPTER 2

PRACTICE PERIODS

INTRODUCTION

General

301. All training must be progressive; unnecessary repetition is bad instructional practice. A soldier learns skills and facts in the basic lessons which should only be taught once during his service. He then needs lots of practice in which to improve his performance and establish the facts firmly in his mind.

302. The proposed sequence for each stage of a practice period is:

- a. REMIND — By explanation.
- b. ASSESS WEAKNESSES — By practice or test.
- c. IMPROVE ON WEAKNESSES — By practice.
- d. PROGRESSIVE PRACTICE — By competitions.

303. The practice periods in this pamphlet are intended as a guide to the best way of exercising soldiers during their basic training. The instructor should plan the period on an assessment of the soldier's weak points.

304. Faults should be immediately brought to the notice of the soldier and corrected, otherwise he will go on making the same mistakes.

305. It may become obvious during a practice period that the soldiers have failed to grasp a particular skill or fact. The instructor will, therefore, have to teach that part of the basic lesson again.

Competition

306. The incentive of competition will always help to make practice more interesting. The whole of the practice period can be based on competitions if the instructor so wishes. Some points on framing competitions are:

- a. They may be on an individual or on a team basis.
- b. If run on a team basis the instructor must ensure that the selected teams are all equal as regards performance. The more advanced members of the team will help along the weaker members.
- c. Marks can be awarded up to a given total, or a total started with and marks deducted for mistakes as the competition progresses.
- d. A chart drawn on a chalkboard or a sheet of paper on which to mark up results should be used.
- e. Further interest can always be attained by making one team or individual watch another, criticising and awarding or deducting marks.

RESTRICTED

f. Above all the instructor must make certain that competitions are simple and realistic, i.e., that they exercise the soldiers in the facts and skills concerning their training.

Master and Pupil

307. The master and pupil method of practice in its simplest form is for one man (the pupil) to work under the supervision of another (the master); the instructor keeps an eye on both.

308. At all stages of training it stimulates interest, keenness and attention to detail. It is particularly useful with large squads and in competitions. Used regularly, it also develops initiative and leadership, and potential leaders may well be discovered by watching the masters at work.

RESTRICTED

PRACTICE 1—LESSONS 1 AND 2

A. INSTRUCTOR'S NOTES

309. **Aim:** To confirm 'Why Things are Seen' and to practise individual camouflage and concealment.

310. **Timings.** One 40 minute period.

311. **Method.** An outdoor practice period.

312. **Stores:**

Rifles	1 per soldier
Helmets steel	1 per soldier
Camouflage equipment	As available
Pointer staff	1
Signal flag	1

313. **Preparation:**

a. Reconnoitre the training area and select two areas of ground for use during concealment practice.

b. Prepare questions on why things are seen related to shape, shadow, silhouette, surface, spacing, movement and detection from airborne observers.

314. **Miscellaneous:**

a. Individual camouflage: Use the following as the basis for discussion.

- (1) Tone and colouring of hands, neck and face.
- (2) Surface and silhouette of helmet and equipment.
- (3) Is foliage used secure?
- (4) Can the weapon be aimed and are its gas ports free?

b. Concealment:

- (1) Divide the squad into two teams. Indicate the area to be used for concealment and explain that the signal to move out of position is the waving of the signal flag.
- (2) Send one team to conceal themselves and use the other as critics.
- (3) While one team are concealing themselves, turn the critics about and question them on why things are seen.
- (4) Allow the critics to move forward until 50 metres from the area used for concealment. When any of them detects a concealed soldier he is to point out the position with the pointer staff and explain why he spotted him.
- (5) If any soldiers are not spotted after a reasonable time, wave the flag.
- (6) Discuss the result of the practice with all the squad.
- (7) Change teams around and repeat the sequence using a different area.

RESTRICTED

B. CONDUCT OF THE LESSON

Preliminaries

309. *Safety Precautions. Normal.*

310. *Revision. Nil.*

Introduction

311. *Explain.* To avoid being an easy target for the enemy, it is essential that the soldier knows how to camouflage and conceal himself.

Suggested Practices

312. *Individual Camouflage:*

- a. *Order the squad to camouflage themselves working in pairs.*
- b. *Discuss each soldiers' camouflage (see paragraph 314.a.).*

313. *Concealment and Why Things are Seen:*

- a. *Question the squad on the rules which assist in good concealment.*
- b. *Practise the squad in concealment (see paragraph 314.b.).*

Conclusion

314. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Normal safety precautions.*
- c. *Summary. To include the following:*
 - (1) The overall standard achieved and any weak points noted.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

PRACTICE 2—LESSONS 3, 4 AND 5

A. INSTRUCTOR'S NOTES

315. **Aim.** *To practise judging distance.*

316. **Timings.** *Two 40 minute periods.*

317. **Method.** *An outdoor practice period.*

318. **Stores:**

Answer cards (see paragraph 319.d.)	1 per soldier (minimum)
Pencils	1 per soldier
Completed range card (see paragraph 319.a.)	1
Scoring chart	1

319. **Preparation:**

- Reconnoitre the training area to be used and select an area with prominent features, natural and artificial, the true ranges of which are known to the instructor and recorded on a range card.*
- Select a minimum of eight objects within 400 metres and six objects of more than 400 metres distance to be used during practice.*
- Prepare a scoring chart for each selected object to be used in the final practice, i.e.:*

Object	Distance	Points Awarded
Red Barn	300m	10 Correct judgment.
		8 10% : 270-330
		6 15% : 255-345
		4 20% : 240-360
		Nil Less than 20%

d. *Prepare an answer card for each soldier.*

Name	Object	Range and Method	Points

RESTRICTED

320. *Miscellaneous:*

- a. *The objects for judging distance practice may be located in any direction from the squad position.*
- b. *The acceptable standard for trained soldiers is within 15% of the true range.*
- c. *During final practice, record points on the answer card as each object is dealt with.*

B. CONDUCT OF THE LESSON

Preliminaries

321. *Safety Precautions. Nil.*

322. *Revision. Nil.*

Introduction

323. *Explain.* Accurate judging of distance is a skill which each soldier requires to develop by much practice. A trained soldier should be able to judge distance to within 15% of the true range.

Suggested Practices

324. *Unit of Measure Method:*

- a. *Question the squad.*
- b. *Practise the squad at objects within 400 metres of the location.*

325. *Appearance Method:*

- a. *Question the squad on what makes objects appear to be:*
 - (1) *Closer than they really are.*
 - (2) *Further away than they really are.*
- b. *Practise the squad using objects that are over 400 metres from the location.*

326. *Aids to Judging Distance.*

- a. *Question the squad.*
- b. *Practise the squad in the use of aids.*

327. *Final Practice.* Issue answer cards and conduct the practice as a competition using objects at the various ranges (see paragraph 319.d.).

Conclusion

328. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Collect answer cards.*
- c. *Summary. To include the following:*
 - (1) *The overall standard achieved and any weak points noted.*
 - (2) *A forecast of the squad's next lesson in this subject.*

RESTRICTED

PRACTICE 3—LESSON 6

A. INSTRUCTOR'S NOTES

329. **Aim.** To practise observation by scanning and searching.

330. **Timings.** One 40 minute period.

331. **Method.** An outdoor practice period.

332. **Stores:**

Articles of military equipment	10 (minimum)
Demonstrators	As available (see paragraph 333.b.)
Answer cards (see paragraph 333.c.)	1 per soldier
Pencils	1 per soldier
Range card (see paragraph 333.b.)	1
Pointer staff	1

334. **Preparation:**

a. Reconnoitre the training area to be used and select:

- (1) An area of ground at least 500 mils wide and 300 metres deep.
- (2) Four reference points within the selected area.

b. Approximately one hour before the lesson, position several articles within the area and fairly close to the reference points. Use an assistant to ensure that the articles are visible and recognizable from the squad location. Record the name and position of each article on a range card/sketch map. Demonstrators, if available, should be placed in position approximately 20 minutes before the period is due to begin.

c. Prepare an answer card for each soldier.

Name	Object	Range	Why Seen	Points

335. **Miscellaneous:**

a. Ideally this type of practice should be introduced frequently in training. On each occasion the articles should be sited so as to be less easily detected. The articles used need not be all of military significance.

b. Sequence of squad practice:

- (1) Indicate the area of the practice and the reference points. Issue answer cards.

RESTRICTED

- (2) *Explain that the squad has twenty-five minutes in which to complete the answer card.*
- (3) *Collect all answer cards at the end of the time limit and award points.*
- (4) *Indicate each of the objects in turn.*

B. CONDUCT OF THE LESSON

Preliminaries

336. *Safety Precautions.* Normal as applicable to any weapons used by demonstrators.
337. *Revision.* Nil.

Introduction

338. *Explain.* In order to locate the enemy the soldier must be competent in scanning and searching, an art which requires a great deal of practice.

Suggested Practices

339. *Why Things are Seen.* Question the squad.
340. *Scanning and Searching.* Question the squad on the techniques employed.
341. *Observation.* Practise the squad (see paragraph 335.b.).

Conclusion

342. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Normal safety precautions.*
- c. *Pack kit.*
- d. *Summary. To include the following:*
 - (1) The overall standard achieved and any weak points noted.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

PRACTICE 4—LESSON 7

A. INSTRUCTOR'S NOTES

343. **Aim.** To practise target indication.

344. **Timings.** One 40 minute period.

345. **Method.** An outdoor practice period which could be conducted indoors using landscape targets.

346. **Stores:**

Pointer staff	1
Chalkboard	1
Landscape target	3 (indoors only)
Miniature Landscape targets	3 (indoors only)

347. **Preparation:**

a. Reconnoitre the training area to be used and select:

- (1) Arc of fire and reference points.
- (2) Three objects to be indicated for each method except 'tracer'.

b. If taking the lesson indoors, position three adjoining landscape targets against one wall and mark the squad's position not more than 10 metres from them.

348. **Miscellaneous:**

a. To practise the squad:

- (1) Use the pointer staff to indicate the target to each of the squad in turn; if indoors indicate on the miniature reproduction target.
- (2) Nominate the method of indication to be used.
- (3) Nominate one of the squad to indicate the target and write down everything he says.
- (4) Discuss the indication with the squad.

b. If the lesson has to be taken indoors, it is essential that the soldier is given practice outdoors at the earliest opportunity in order to use a realistic arc of fire.

B. CONDUCT OF THE LESSON

Preliminaries

349. **Safety Precautions.** Nil.

350. **Revision.** Nil. Indicate arcs of fire and reference points to be used during the practice.

Introduction

351. **Explain.** In battle there will be occasions when the soldier, having seen the enemy first, has to indicate the position to the rest of his section. It is therefore most important that all soldiers are competent in this technique.

RESTRICTED

Suggested Practices

352. *Indication*

- a. *Question the squad on the various methods which can be employed.*
- b. *Practise the squad (see paragraph 348.a.).*

Conclusion

353. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Pack kit.*
- c. *Summary. To include the following:*
 - (1) Any weak points noted.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

PRACTICE 5—LESSON 9

A. INSTRUCTOR'S NOTES

354. **Aim.** *To practise maintaining concealment when moving with or without weapons.*

355. **Timings.** *One 40 minute period.*

356. **Method.** *An outdoor practice period.*

357. **Stores:**

Personal weapons

1 per soldier

Drill rounds (belted)

15 (if GPMG is included)

Signal flag

1

358. **Preparation:**

a. *Reconnoitre the training area to be used and select an area of ground for use during practice of each type of movement.*

b. *For the final practice, select two areas each containing an arc for 'movers' and positions for 'observers'.*

c. *Decide on the signals to start and to stop the practice.*

359. **Miscellaneous.** *For the final practice:*

a. *Divide the squad into two groups, 'movers' and 'observers'.*

b. *Indicate the arc and the start point for the 'movers' and allot them a time limit. Indicate the positions for the 'observers'. Demonstrate the signal to start and the signal to stop the practice.*

d. *At the end of the time limit stop the practice and, using the 'observers' as critics, discuss collectively the 'movers' actions.*

e. *Change the groups round and repeat the practice on a different area.*

B. CONDUCT OF THE LESSON

Preliminaries

360. **Safety Precautions.** *Normal.*

361. **Revision.** *Nil.*

Introduction

362. **Explain.** *It is important that each soldier knows how to combine the art of concealment with movement. This requires a great deal of practice using different types of cover.*

RESTRICTED

Suggested Practices

363. a. *Practise the squad in the open with weapons using the monkey run, leopard crawl, the roll and the walk (side crawl and knee crawl for the gunner).*
b. *Practise the squad in each type of movement using cover.*
c. *Final practice (see paragraph 359).*

Conclusion

364. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Normal safety precautions.*
- c. *Pack kit.*
- d. *Summary. To include the following:*
 - (1) The overall standard achieved and any weak points noted.
 - (2) A forecast of the squad's next lesson in this subject.

RESTRICTED

PRACTICE 6—LESSON 17

A. INSTRUCTOR'S NOTES

365. **Aim.** To practise fire control orders.

366. **Timings.** Two 40 minute periods.

367. **Method.** Outdoor practice periods for NCOs.

368. **Stores:**

Answer cards (see paragraph 369.d.)	1 per soldier
Pencils	1 per soldier
Instructors answer sheet	1
Assistants (see paragraph 370.b.)	4 (minimum requirement)
Range card	1
Signal flag (see paragraph 370.b.)	1
Blank ammunition	As required
Blank firing attachments	As required

369. **Preparation:**

- Reconnoitre the training area and decide on the number of incidents and the areas to be used for them.
- Select arc of fire and reference points.
- Prepare a range card for the complete practice.
- Prepare an answer card for each soldier.

NAME.....

Incident	Type of FCO (2)	Group (2)	Range (2)	Indication (2)	Type of Fire (2)	Total (10)
1						
2, etc						

- Prepare an Instructor's answer sheet containing solutions for each incident.

370. **Miscellaneous:**

- Incidents should be planned to realistically include each type of FCO, i.e.,
 - En MG at 400 m Full FCO using GPMG.
 - En advancing 300 m Delayed FCO using rifle group or section.
 - Sniper 450 m Full FCO using GPMG.
 - En snapshooting 250 m Individual FCO using rifle group.
 - En dash for cover 200 m Brief FCO using rifle group.

RESTRICTED

- b. *A complete rehearsal of the assistants' actions and of signals used to control them is essential.*
- c. *To practise the squad:*
 - (1) *Explain that the incidents bear no relation to each other and the answer to each is to be written on the answer card.*
 - (2) *Signal for an incident to begin.*
 - (3) *Correct each answer card and allot marks.*
 - (4) *Give the solution and discuss with the squad.*

B. CONDUCT OF THE LESSON

Preliminaries

371. *Safety Precautions. Normal as applicable to weapons being used by assistants.*

372. *Revision. Nil.*

Introduction

373. *Explain.* It is essential that all NCOs can decide quickly on the best type of fire control order to use to bring effective fire down on the enemy. A great deal can be learnt by practice.

Suggested Practices

374. a. *Question the squad on the meanings of terms used in fire control.*
- b. *Question the squad on types of fire control orders.*
 - c. *Question the squad on the points to be assessed before issuing a fire control order.*
 - d. *Practise the squad (see paragraph 370.c.).*

Conclusion

375. *End of Lesson Drill:*

- a. *Questions from the squad on the entire lesson.*
- b. *Normal safety precautions.*
- c. *Pack kit.*
- d. *Summary. To include the following:*
 - (1) *The overall standard achieved and any weak points noted.*
 - (2) *A forecast of the squad's next lesson on this subject.*

376 to 390. *Reserved.*

RESTRICTED

CHAPTER 3

DEMONSTRATIONS

INTRODUCTION

General

391. Demonstrations are invaluable for arousing interest and can cater for relatively large numbers of spectators. The demonstrations contained in this chapter are designed to more fully illustrate the skills and techniques taught in Chapter 1. and are based on demonstrations conducted at the School of Infantry.

Organization and Preparation

392. A demonstration requires a great deal of careful organization and preparation particularly in the following points:

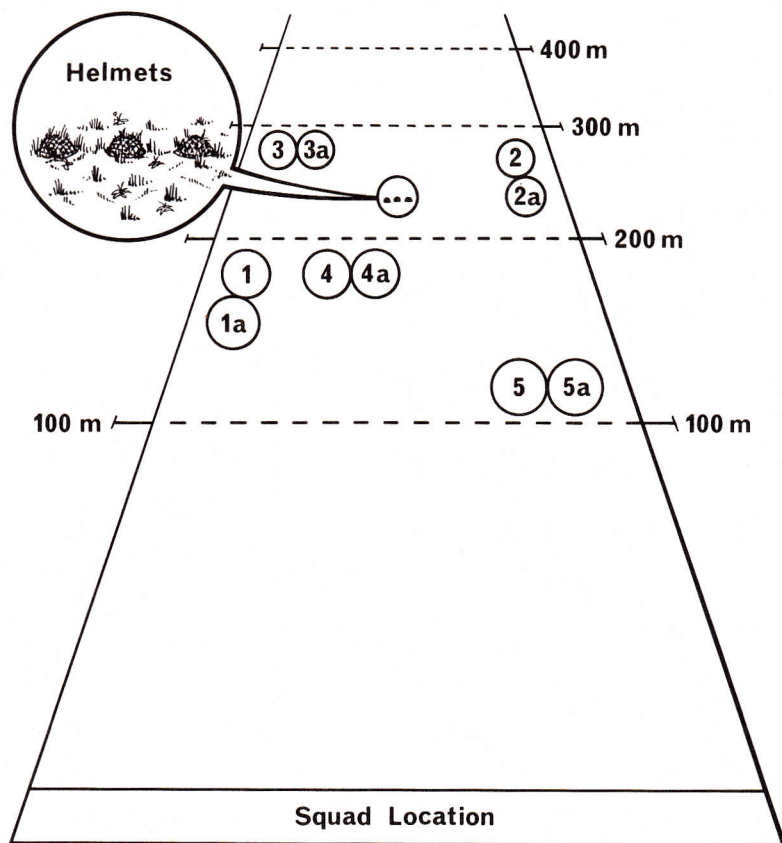
- a. Rehearsals in detail are vital
- b. Ensure that all the spectators can see all the demonstration.
- c. The area chosen for the demonstrations should be free of distractions.
- d. Such things as direction boards and taped enclosures not only assist in the control of spectators but ensure efficient organization.
- e. A loudspeaker is necessary if the audience is large. Stand upwind when talking.
- f. Signals to demonstrators should be so arranged so that the spectators can not see them being relayed. It is more effective if things appear to happen naturally.
- g. Consider action to be taken in case of weather interference.

393 to 399. *Reserved.*

RESTRICTED

RESTRICTED

RESTRICTED



Legend

- | | |
|-------------------------------|---------------------------------|
| 1 Too little camouflage. | 3 Soldier in gap. |
| 1a Just right camouflage. | 3a Correct position. |
| 2 Too little camouflage. | 4 Soldier using isolated cover. |
| 2a Too much camouflage. | 4a Correct position. |
| 5 Soldier looking over cover. | |
| 5a Correct position. | |

Fig 36.—Suggested layout for Demonstration No. 1.—
Personal camouflage and concealment

RESTRICTED

RESTRICTED

RESTRICTED

RESTRICTED

DEMONSTRATION 1.—PERSONAL CAMOUFLAGE AND CONCEALMENT

A. INSTRUCTOR'S NOTES

400. **Aim.** *To demonstrate:*

- a. *The reason why things are seen.*
- b. *The value of artificial aids to concealment.*
- c. *How to make the best use of cover from view.*

401. **Timings.** *One 40 minute period.*

402. **Method.** *An outdoor demonstration.*

403. **Stores:**

Tables (1·828 m (6 ft))	1
Chairs	1 per soldier
Lectern	1
Rifles (camouflaged)	3
Binoculars (camouflaged)	1
Helmets steel (completely camouflaged)	4
Loud hailer or public address equipment	1
Hessian (450 mm (18 in) square)	1 piece
Scrim (Black or brown)	1 roll
Face veils	12
Groundsheets	4
Sandbags	6
Camouflage cream	As available
Sharp knife or razor blade	1
Picks	2
Shovels GS	3
Flags	2 (1 red, 1 white)
$\frac{1}{4}$ ton vehicles	2 (one with net)
4 ton vehicle	1

404. **Personnel:**

- 3 Drivers
- 1 NCO and 10 soldiers to act as demonstrators (dress: CEFO)

405. **Preparation:**

- a. *Reconnoitre the training area and, by adapting the cover available, plan the layout for all phases to be demonstrated. A guide is at Fig. 36.*
- b. *Nominate the demonstrators for each incident and allocate signals.*
- c. *Rehearse the demonstration fully immediately before it is due to commence to ensure smooth running and to permit any necessary adjustments for changes in light conditions, etc.*

RESTRICTED

d. *Set up the table for the demonstration, placing under it and out of sight, a camouflaged helmet, a camouflaged rifle, binoculars and digging tools.*

406. *Miscellaneous:*

- a. *Brief the demonstrators on their actions and flag signals before sending them to their positions.*
- b. *Ensure that the demonstrators, depicting 'Too little', 'Too much', and 'Just right' are camouflaged to fit their descriptions in the text.*
- c. *The two camouflaged soldiers (1A and 2A in Fig 36) should be in positions of observation at the start of the demonstration.*

B. CONDUCT OF THE LESSON

Preliminaries

407. *Safety Precautions. Normal.*

408. *Revision. Question the squad on why things are seen related to the shape shadow, silhouette, spacing and movement. Indicate the arc for the demonstration.*

Narrative and Phases of the Demonstration

409. *Explain.* Camouflage and concealment are two very important skills which the soldier has to master. They are the skills which enable him to see without being seen and to kill without being killed.

410. Let us be quite clear as to the difference between camouflage and concealment which are closely linked within battlefield discipline:

- a. Camouflage consists of destroying the contrasts of shape, silhouette, surface and, to some extent, shadow, so that the soldier is less conspicuous on the battlefield.
- b. Concealment is making the best use of cover from view without sacrificing the minimum required fields of fire.

411. We will consider CAMOUFLAGE first of all. Search the arc previously indicated. There are some camouflaged soldiers in positions of observation. How many are there? Look down and I shall change things around for those who cannot see anything.

412. *Circle White Flag. Demonstrators reaction:*

- a. *Two non camouflaged soldiers take up position.*
- b. *¼ ton vehicle without net moves onto skyline.*
- c. *Three steel helmets put into position.*

413. *When all are in position. Explain.* Look up. Now there are more things visible and we shall deal with each in turn. Whilst looking down, a number of positions were

RESTRICTED

altered and uncamouflaged soldiers took over from camouflaged soldiers. It should be noted that the earlier use of camouflage made each soldier more difficult to see. Look slightly left. There is an uncamouflaged soldier standing in the open. His **SHAPE** gives him away; the **SURFACE** of his combat clothing, face and hands contrast in tone and colour with his surroundings; there is a certain amount of trapped **SHADOW** about him, especially under his steel helmet. In bright light the body can cast shadow **WATCH** carefully and note how a camouflaged soldier who has taken care to break up his **SHAPE** and tone down his **SURFACE** merges in completely with his surroundings.

414. *Wave White Flag Once. Non camouflaged/camouflaged soldiers change round.*

415. *Explain.* Now, look beyond that position to the skyline What is that object? A landrover The **SILHOUETTE** was obvious even at a long distance. To make it more difficult to detect, it has to move off the skyline and use a little camouflage.

416. *Wave White Flag Twice. $\frac{1}{4}$ ton vehicle with net moves to position below skyline.*

417. *Explain.* Look on the axis of the arc—there is something unusual there a number of steel helmets evenly **SPACED** this looks artificial and man-made Now look at the uncamouflaged soldier slightly right of the helmets and in front of the trees. He contrasts vividly with his background Note how the camouflaged soldier who takes his place and remains still is very difficult to detect

418. *Wave White Flag Three Times. Camouflaged/uncamouflaged soldiers change round.*

419. *Explain.* If he makes a quick movement he will attract attention and give away his position.

420. *Wave White Flag Four Times. Soldier makes a QUICK movement.*

421. *Explain.* However, slow movements are difficult to observe and do not attract attention.

422. *Wave White Flag Five Times. Soldier makes slow movement.*

423. *Explain.* We will have a closer look at those camouflaged soldiers to see how they are camouflaged.

424. *Washout Signal, White Flag. Demonstrators come to squad location.*

425. *Explain.* In the meantime, let us consider the artificial aids which are available for personal concealment.

426. *NCO takes up position at the table.*

427. *Explain.* The main aspects requiring camouflage are **SURFACE** and **SHAPE**.

- a. *Helmet.* Place hessian over the helmet to dull the surface. The shape becomes more natural with scrim in the net coming down and around the brim. Add foliage to suit the surroundings and be prepared to change it to suit any change in the surroundings.

RESTRICTED

b. *Face and Hands*. The surface has to be camouflaged. If camouflage cream is not available use sump oil, mud or burnt cork to dull the surface.

c. *Rifle*. Dull the surface by tying hessian around the butt and forehand guard, ensuring that it is tight enough so as not to impair the grip. Check that the hessian does not interfere with the sighting system, the magazine housing and the cocking handle.

d. *Binoculars*: When not in use, they are best carried down the inside front of the jacket. Use strips of hessian to dull down the black gloss finish.

e. *Digging Tools*. The spade or pick on the soldier's back has an easily detectable surface, so wrap the handle in a sandbag, also the spade blade.

428. Now let's look at the demonstrators, firstly their front view:

a. *Too Little*. This is the soldier who was easily detected, slightly left and in the open. The surface of the face, hands and helmet are insufficiently camouflaged. The rifle is not camouflaged. The texture of his equipment has not been considered.

b. *Too much*. This is the soldier who could not be detected in front of the trees near the steel helmets. His camouflage is so overdone that he can hardly operate in battle. The excess camouflage on his helmet prevents him from observing properly. He cannot see without being seen. His equipment is so camouflaged that he cannot easily get at his magazines in the pouch. His rifle is so overdone that the hessian is fouling up the parts which need to be free. He may be invisible to the enemy but he is of little effective use.

c. *Just Right*. This is the soldier who swapped places with 'Too little' during the demonstration. He has observed all the rules.

429. Now let us turn them about:

a. *Too Little*. No attempt to break the surface of the equipment or digging tool. The shape of the shoulders is easily seen.

b. *Too Much*. Could not get at the back pouches, bayonet or digging tool, although they are all under there, somewhere.

c. *Just Right*. Note the use of a face veil to tuck in foliage and cover the surface of the pouches and digging tool. Lifting the veil allows him to get at them easily.

430. Look down while I move demonstrators into position.

431. *Washout, Red Flag*. Demonstrators move into position. Row of helmets removed.

432. *Explain*. Look up. Now let us consider CONCEALMENT. Search the arc carefully. A number of correctly camouflaged soldiers are visible. This is due to bad concealment. Quarter left this soldier has made the mistake of pausing in a gap to observe. He has not considered the silhouette he is making against a contrasting background. Another soldier is very close to him able to see just as much. I'll have him wave his hand to indicate his position.

RESTRICTED

433. *Wave Red Flag Once. Demonstrator waves.*

434. *Explain.* Slightly left 100m—lone bush. The soldier in this instance has selected an isolated piece of cover and therefore made it so much easier to search for him, locate and indicate his position.

435. Slightly right—low brick wall. The soldier who is visible is breaking the straight line along the top of the wall. To observe from this type of cover, look around it not over it. There is another soldier doing just this, I'll have him wave a hand to indicate his position.

436. *Wave Red Flag Twice. Demonstrator at end of wall waves.*

437. *Explain.* Slightly left—bushes—This soldier, though using a different type of cover is making a similar mistake as the last one. He can observe just as well by kneeling down and looking through as opposed to over the bushes.

438. One soldier, completely uncamouflaged, has been observing our position throughout the whole demonstration. He has concealed himself by clever use of SHADOW—I'll have him move forward from his position.

439. *Wave Red Flag Three Times. Demonstrator advances from his position then returns to the shadow again.*

440. *Explain.* That completes the demonstration of camouflage and concealment. These skills are vital for the survival of the soldier in battle. He must be correctly camouflaged and:

- a. Look though, not over cover.
- b. Look around cover if he cannot look through it.
- c. Avoid isolated cover.
- d. Avoid breaking straight lines.
- e. Consider the effect of background contrast.
- f. Use shadows.

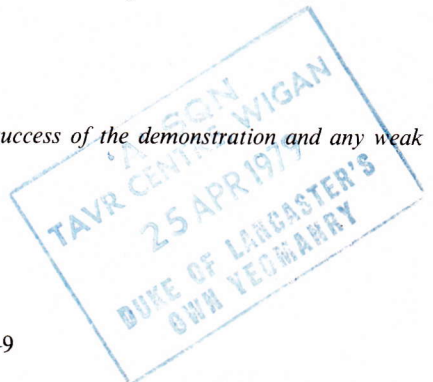
441. *Washout Signal, Red Flag. Demonstrators come to squad location.*

End of Lesson Drill for Demonstrators.

442. a. *Normal Safety precautions.*

b. *Pack kit.*

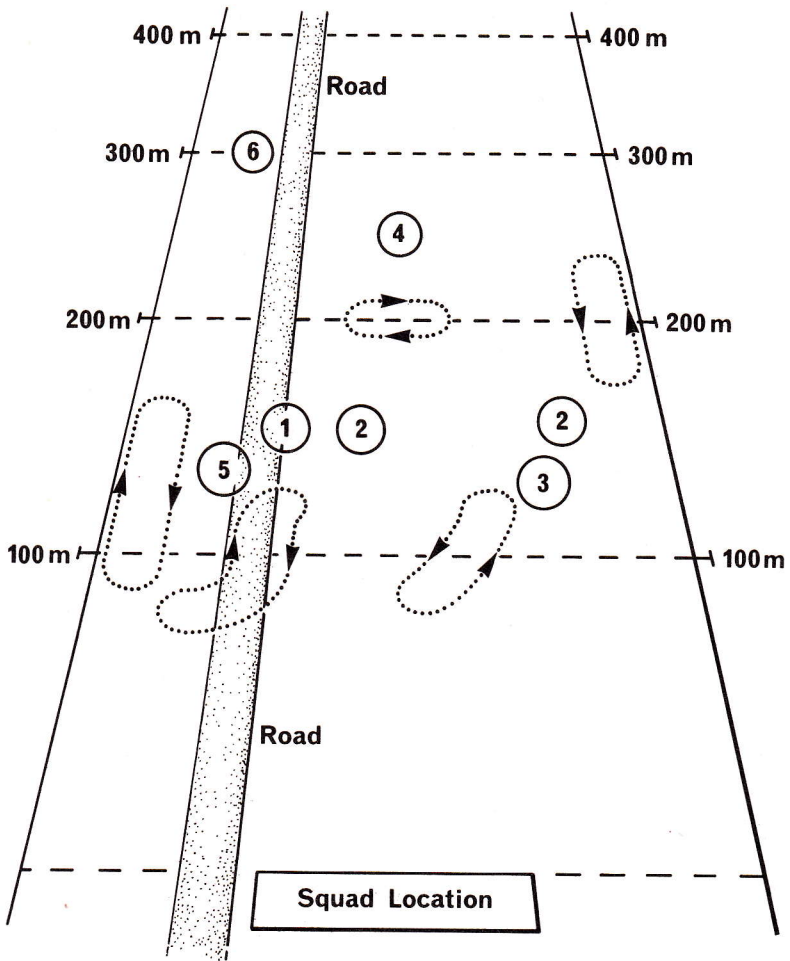
c. *Summary. to include. The overall success of the demonstration and any weak points noted.*



RESTRICTED

RESTRICTED

RESTRICTED



Legend



Fig 37.—Suggested layout for Demonstration No. 2.—
Observation at night

RESTRICTED

RESTRICTED

RESTRICTED

RESTRICTED

DEMONSTRATION 2—OBSERVATION AT NIGHT

A. INSTRUCTOR'S NOTES

443. *Aim.* To teach how best to use the eyes and ears to locate and identify sounds and actions by night.

444. *Timings.* Two 40 minute periods commencing at dusk minus 30 minutes.

445. *Method.* A demonstration best suited to follow Lesson 13—Introduction to Night Training.

446. *Stores:*

Rifles	1 per soldier
GPMG	1 (DP if available)
Loudhailer/Public address equipment	1
Torches with red filters	As required
Lectern	1
Pick	1
Shovel	1
Wire cutters	1
Sledge hammer	1
Angle iron pickets/metal stakes	1

447. *Personnel.* One NCO and five soldiers as demonstrators.

448. *Preparation:*

- a. Reconnoitre the training area to be used and select:
 - (1) The squad position.
 - (2) The position of each incident to be demonstrated. (See Fig 37).
- b. Check the time of dusk on the day before the demonstration but be prepared to alter timings to suit conditions on the actual night.
- c. Nominate each demonstrator to an incident.
- d. Rehearse the demonstration fully the night before.

449. *Miscellaneous:*

- a. Confirm the actions required from the demonstratots before sending them to their positions.
- b. If the incidents cannot be effectively controlled using the loudhailer/public address equipment then a series of signals with the red filter torch should be devised, i.e., One flash—incident 1; two flashes—incident 2, etc.
- c. This demonstration may be shown to more than one squad at the same time. Each squad instructor involved requires to attend the full rehearsal.

RESTRICTED

B. CONDUCT OF THE LESSON

Preliminaries

450. *Safety Precautions. Normal.*

451. *Revision. Nil. Indicate the arc for the demonstration. Order the squad to lie down.*

Narrative and Phases of the Demonstration

452. *Explain.* It is extremely important that each soldier knows how best to use his eyes and ears to locate and identify sounds and actions by night.

453. *Signal the Start of Phase 1.*

454. *Phase 1. Explain.* Search the arc and try to locate the enemy; whilst so doing:

- a. Note how movement is quickly spotted.
- b. Note the effect of different background.
- c. Practice off-centre vision.
- d. Note ranges to prominent objects.
- e. Select reference points.
- f. Observe skylines and prominent silhouettes.
- g. Note how colours fade and become shades of grey.
- h. As the light fails, try aiming with the iron sight. then with the optic sight.
- j. Notice how landmarks appear to change shape.
- k. As it becomes darker, note how difficult it is to judge distance.

455. *(When almost completely dark) Signal the End of Phase 1. Demonstrators move to new positions for Phase 2.*

456. *Phase 2. (When completely dark) Explain.* To identify sounds at night it helps to half open the mouth and turn an ear towards the sound. If a moving object is suspected, put the ear close to the ground. Covering the ears at night with a hood, etc, is very much like blindfolding the eyes by day. Several incidents will be demonstrated, one at a time, within the arc. Try to determine:

- a. How many soldiers are involved?
- b. What they are doing?
- c. Their direction and range.

RESTRICTED

457. *Signal each of the following incidents in turn.*

Number	Incident	Direction	Range
1.	Two soldiers digging	Slightly left	150
2.	Two soldiers: One loading SLR One loading GPMG	Slightly right Slightly left	150 150
3.	One soldier cutting wire or knocking in picket/ stake	Half right	140
4.	One soldier lighting cigarette and smoking	Axis	250
5.	One soldier walking (on road)	Slightly left	100-150
6.	One soldier reading map using a torch	Half left	300

458. *Signal End of Phase 2. Demonstrators collect kit and return to enclosure.*

459. *Explain.* That completes the demonstration of locating and identifying sounds at night. It is most important that the techniques are practised at every opportunity.

End of Lesson Drill for Demonstrators

460. **a.** *Normal safety precautions.*

b. *Pack kit.*

c. *Summary to include. The overall success of the demonstration and any weak points noted.*

RESTRICTED

RESTRICTED

RESTRICTED

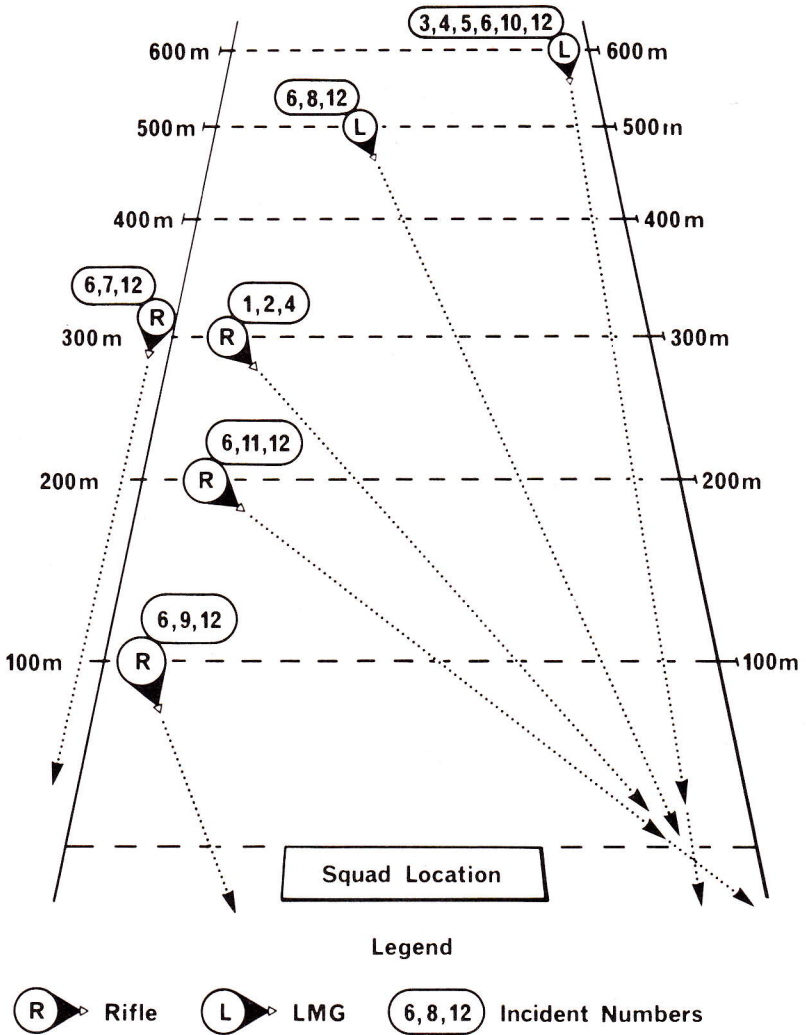


Fig 38.—Suggested layout for Demonstration No. 3—
Locating the enemy by his fire by day

RESTRICTED

RESTRICTED

RESTRICTED

RESTRICTED

DEMONSTRATION 3 (LIVE FIRING)—LOCATING THE ENEMY BY HIS FIRE BY DAY

A. INSTRUCTOR'S NOTES

461. *Aim.* To demonstrate how to locate the enemy by his fire by day

462. *Timings.* One 40 minute period.

463. *Method.* A live firing demonstration conducted by day on a Field Firing Area.

464. *Stores:*

Demonstration layout and chart (see Fig 38 and Annex A.)	7 copies.
Rifles	4
7-62 mm LMG on tripods	3
7-62 mm LMG magazines	2 boxes
Ammunition 7-62 mm ball	As required
Binoculars (for squads use)	As available
Lectern	1
Shovels	2
Sandbags	10
Large white flags	1
Small white flags	6
Large blue flags	1
Red range flags on poles	7
Metal pickets and white tape for spectators enclosure	As required

465. *Personnel:*

Officer commentator
One NCO as flag controller
Five instructor demonstrators

466. *Preparation:*

a. Reconnoitre the Field Firing Area and decide on:

- | | |
|-----------------------------------|--------------|
| (1) Spectators enclosure location | } See Fig 38 |
| (2) Weapon locations | |

b. All weapons must be sited, arcs and elevations checked by the officer in charge of the demonstration. Safety arcs are as follows:

- (1) LMG on tripod. 200 mils (11 deg) out from the outer edge of the spectators enclosure. The sight is to be set at 500 metres MORE than the range to the outer edge of the spectators enclosure.

RESTRICTED

(2) *Shoulder Controlled Rifle.* For this demonstration, and by day only, the line of a shoulder controlled rifle may be as close as 200 mils (11 deg) to the outer edge of the spectators enclosure provided that:

- (a) Spectators are stationary at the time of firing.
- (b) The firer is a marksman, and the rifle he is using is correctly zeroed to him.
- (c) The distance between the rifle position and the spectators does not exceed 300 metres.
- (d) An aiming mark is provided for the firer, which is at a minimum of 500 metres, i.e., 200 metres beyond, and above the height of the spectators. There must be a clear line of sight to a point 2.440 metres (8 feet) below the mark, and the latter must be visible to the officer in charge of the demonstration.
- (e) The sights of the rifle are set at 600 metres.
- (f) The officer in charge of the demonstration satisfies himself, before firing starts that the firer knows the point of aim; that it is checked by ranging (using tracer if necessary); and that the conditions listed in the foregoing sub paragraphs are complied with.

The object of these conditions is to reduce the possibility of bullets striking the ground short of the spectators enclosure.

- c. At least one 40 minute period is necessary for a complete rehearsal of the demonstration.
- d. Signals must be clear and tested during the rehearsal. Ideally each demonstrator should have a copy of the demonstration layout (see Fig 38) and the demonstration chart (see Annex A).
- e. Each demonstrator is to have a red flag which is to remain up in his position until the order to load is given.
- f. Ensure that all the demonstrators fully understand the safety regulations for firing to a flank.

467. *Miscellaneous.* The position of demonstrators may have to be modified to suit local conditions but the safety regulations are on no account to be altered.

B. CONDUCT OF THE LESSON

Preliminaries

468. *Safety Precautions. Normal.*

469. *Revision.* Question the squad on the methods and aids to judging distance.

Narrative and Phases of the Demonstration

470. *Explain.* The area in which the enemy is concealed can often be located by his firing a shot. How can this be done? When a bullet travels through the air it displaces the air

RESTRICTED

around and behind it. The space created behind the bullet is immediately closed, making a noise like the crack of a whip. This 'crack' tells us very little. It doesn't tell us where the bullet is going or where it has come from. Listen to the 'crack'.

471. **Phase 1.** *Rifle fires three deliberate shots from 300 metres.*

472. *Explain.* The explosion, when the round is being fired in the weapon makes a dull thud or thump. This 'thump' give a good indication to the direction from which the weapon is being fired. Listen this time to the 'Thump' which follows the 'Crack'.

473. **Phase 2.** *Rifle fires three deliberate shots from 300 metres.*

474. *Explain.* By listening to the 'thump' the direction of the enemy weapon can be estimated. The next stage is to find out how far it is away. A knowledge of the following facts will help:

- a. In the first second of its flight a bullet travels approximately 600 metres.
- b. Sound travels at approximately 300 metres per second.

475. Based on these facts, if a shot were fired from 600 metres away:

- a. The 'crack', travelling at 600 metres per second would be heard one second later.
- b. The 'Thump' travelling at 300 metres per second would take two seconds.

Therefore, a delay of one second between the 'Crack' and the 'Thump' places the enemy about 600 metres away. By a similar calculation a delay of half a second between the 'Crack' and the 'Thump' means the shot is fired from about 300 metres away.

476. The next difficulty, which can only be overcome by practice, is to be able to distinguish the differences between fractions of a second. Listen to this weapon which will illustrate the difference in the delay between 'Crack' and 'Thump'. The weapon is 600 metres away.

477. **Phase 3.** *LMG at 600 metres fires 3 single rounds.*

478. *Explain.* I will now get two weapons, one at 300 metres and the other at 600 metres, to fire alternately to illustrate the different delay at these two ranges.

479. **Phase 4.** *Rifle at 300 metres and LMG at 600 metres fire alternate shots. Commentator remarks on each shot fired, e.g.:*

- "Three hundred" — "Six hundred"
- "Half a second" — "One second"
- "Three hundred" — "Six hundred"

480. *Explain.* The LMG is slightly more difficult to locate when it is firing automatic. The last 'crack' and the last 'thump' of a burst must be picked out before it is possible to calculate the distance to the weapon.

481. **Phase 5.** *LMG fires three bursts of 4 to 5 rounds from 600 metres.*

482. *Explain* 'LOOK DOWN'.

RESTRICTED

483. *Demonstrators move to new locations for the next part of the demonstration.*

484. *(Whilst the demonstrators are moving their locations). Explain. 'Crack' and 'Thump' gives the general area in which the enemy are concealed. However, to find his exact location, the other visual training lessons which have already been taught must be applied. First judge the distance to the enemy's area, then search thoroughly to pierce his camouflage. Finally indicate the target to the Section Commander. 'LOOK UP'.*

485. *Describe the battle setting to the squad. Explain. We are members of a section which has just advanced to this point in an advance to contact. On reaching our present position the enemy open fire.*

486. **Phase 6.** *All demonstrators open fire until the wash out signal is given.*

487. *Explain. It is obvious that when several weapons are firing at the same time it is difficult to pick out the 'Crack' and 'Thump' of individual weapons. This can only be mastered after a great deal of practice. Each position will now fire in turn, try and locate which one is firing.*

NOTE: *After each demonstrator has fired in Phases 7 to 11 inclusive they should be made to stand up and the range to each given by the commentator. All phases can be repeated if the squad fail to detect the enemy first time.*

488. a. **Phase 7.** Rifle at 350 metres fires three rounds.
b. **Phase 8.** LMG at 500 metres fires three bursts.
c. *Explain.* Listen very carefully to the next phases (Phase 9).
d. **Phase 9.** Rifles at 125 metres fires one round.
e. **Phase 10.** LMG at 600 metres fires single rounds.
f. **Phase 11.** Rifle at 200 metres fires 3 rounds.

489. *Explain.* Having had practice in locating these enemy positions individually all the demonstrators will now fire together again. How many can be detected?

490. **Phase 12.** *All demonstrators fire until stopped by the wash out signal.*

491. *Explain.* As a result of this demonstration it must be clear that much practice is needed before soldiers become proficient at locating the enemy by his fire.

End of Lesson Drill for Demonstrators

492. a. *Normal safety precautions.*
b. *Pack kit.*
c. *Summary to include: The overall success of the demonstration and any weak points noted.*

DEMONSTRATION CHART

Phase	Weapon	Position	Remarks	Signal
1	Rifle	300m in open	To illustrate CRACK	1 wave BLUE flag
2	Rifle	300m in open	To illustrate THUMP	1 wave BLUE flag
3	LMG	600m in open	To illustrate differences in CRACK and THUMP at 600m	2 waves BLUE flag
4	Rifle & LMG	300m & 600m (alternate shots)	To illustrate difference in delay between CRACK and THUMP at 300 and 600m.	3 waves BLUE flag
5	LMG	600m (3 bursts)	To illustrate CRACK and THUMP in automatic weapons. (Squad must look down after this demonstration to allow demonstrators to change positions).	4 waves BLUE flag
			MOVE TO NEW POSITIONS	WASH OUT BLUE FLAG
6	All rifles & LMGs	All positions 7-11	To give battle picture fire until wash-out signal is given.	Circle WHITE flag
7	Rifle	350m	Soldiers are now being exercised under instructors. Each demonstrator having fired his series will be prepared to repeat, if necessary. He will stand up and wave his flag when signalled to do so for the benefit of those soldiers who have not seen him.	1 wave WHITE flag
8	LMG	500m (Bursts)		2 Waves WHITE flag
9	Rifle	140m		3 waves WHITE flag
10	LMG	600m (single rounds)		4 waves WHITE flag
11	Rifle	200m		5 waves WHITE flag
12	All rifles & LMGs	All positions 7-11	Battle picture. Fire until washout signal is given. Demonstrators unload and raise red flags in positions.	Circle WHITE flag

NOTE: For all phases except 9, demonstrators will fire three rounds/bursts according to serial. For Phase 9, only one round will be fired. For repeats the same signal will be given.

RESTRICTED

3-23

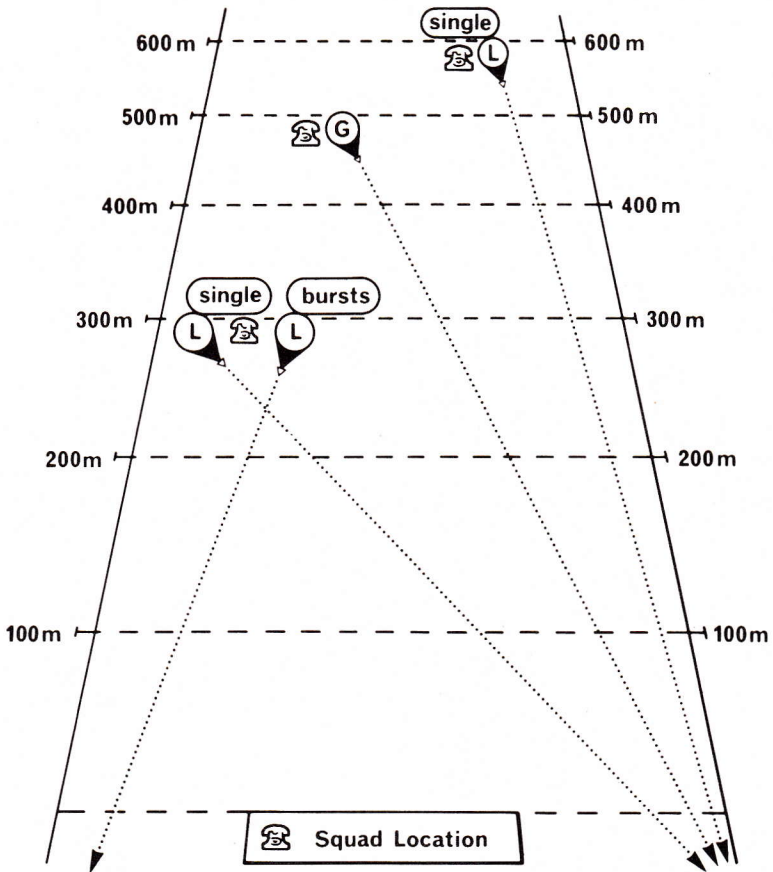
RESTRICTED

ANNEX A to
DEMONSTRATION 3

RESTRICTED

RESTRICTED

RESTRICTED



Legend

-  LMG  GPMG  Single rounds fired
-  Telephone link  Rounds fired in bursts
-  Direction of fire

Fig 39. Suggested layout for Demonstration No. 4.—
Locating the enemy by his fire at night

RESTRICTED

RESTRICTED

RESTRICTED

DEMONSTRATION 4 (LIVE FIRING)—LOCATING THE ENEMY BY HIS FIRE AT NIGHT

A. INSTRUCTOR'S NOTES

493. *Aim.* To demonstrate and practise how to locate the enemy by his fire at night.

494. *Timings.* One 40 minute period.

495. *Method.* A Live Firing demonstration conducted at night on a Field Firing Area.

496. *Stores:*

Red lamps	As required to mark limit of spectators enclosure
LMGs on tripods	3 (Armourers certificates)
LMG magazines	3 boxes
GPMG (SF) complete to CES	1 (Armourers certificate)
Telephones	4 (1 each at 300, 500, 600 and control)
Verex pistol	1
Torches with red filter	5
Torches less red filter	2
Public address equipment	As available
Lectern	1
Radio A40	5
Cable D10	1 drum
Sandbags (filled)	12
Ammunition:	
7-62 mm Ball	500 rounds
7-62 mm Tracer	300 rounds
7-62 mm Belted Ball	500 rounds
7-62 mm Belted Tracer	200 rounds
Carts 1 in Signal Red	3

497. *Personnel:*

Officer commentator
Four instructors to fire the weapons
Four soldiers to assist in laying out the equipment
Two signallers (with safety link)
One medical orderly with ambulance

498. *Preparation:*

- a. Reconnoitre the Field Firing Area and decide on:
- | | |
|-----------------------------------|--------------|
| (1) Spectators enclosure location | } See Fig 39 |
| (2) Weapons location | |

RESTRICTED

b. All weapons must be sited and arcs and elevations must be checked by the officer in charge of the demonstration in daylight. Once checked, no alterations are allowed and no weapon is to be left unattended.

c. Sandbags are to be positioned to ensure that should any equipment collapse during the demonstration elevation and direction would still be maintained. In the event of this occurring, the weapon would take no further part in the demonstration.

d. LMG/GPMG are to be sited at not less than 200 mils (11 deg) out from the outer edge of the spectators location. Sights are to be set at 500 metres MORE than the range to the outer edge of the spectators enclosure.

e. If there is any danger of bullets striking the ground before they have passed beyond the spectators a 570 mil (30 deg) safety margin must be made.

f. Rifles, LMGs on bipods or any other weapons which cannot be clamped securely on a pre-determined line are NOT to be fired on any night firing demonstration.

g. Tripods and LMG/GPMG barrels are to be inspected and gauged by an armourer in accordance with current EMER and a certificate rendered to this effect.

h. At least one 40 minute period is necessary for a rehearsal by day. Signals must be clear and tested during rehearsal.

j. Ensure that all demonstrators fully understand the safety regulations for firing to a flank.

499. *Miscellaneous.* Incidents may be modified to suit availability of ammunition.

B. CONDUCT OF THE LESSON

Preliminaries

500. *Safety Precautions.* Normal.

501. *Revision.* Question the squad on locating the enemy by his fire by day.

Narrative and Phases of the Demonstration

502. *Explain.* In addition to using the 'Crack' and 'Thump' technique it is sometimes possible to see the flash of a weapon firing at night. However, beware of judging the weapon's position from any tracer rounds it is firing.

503. We will assume that we are advancing and are met by enemy fire.

504. *Phase 1.* All demonstrators fire ball at the rapid rate for a period of 10 seconds.

505. *Explain.* Each weapon will now fire individually. Try to determine:

- a. What is the weapon?
- b. Where is it?
- c. What is the range?

RESTRICTED

506. a. **Phase 2.** *LMG at 600 fires three single rounds.*
b. **Phase 3.** *LMG at 300 fires three single rounds.*
c. **Phase 4.** *LMGs at 300 and 600 fire three single rounds alternatively.*
d. **Phase 5.** *LMG at 300 fires three 5 round bursts.*
e. **Phase 6.** *GPMG at 500 fires three 20 round bursts.*
f. **Phase 7.** *LMG at 300 and GPMG at 500 fire three 5 round bursts alternatively to demonstrate rates of fire.*
g. **Phase 8.** *All weapons fire tracer at rapid fire for 10 seconds.*

507. *Explain.* That concludes this demonstration of locating the enemy by his fire at night.

End of Lesson Drill for Demonstrators

508. a. *Normal safety precautions as applicable to night training.*
b. *Pack kit.*
c. *Summary to include: The overall success of the demonstration and any weak points noted.*
- 509 to 530. *Reserved.*

RESTRICTED

RESTRICTED

RESTRICTED

CHAPTER 4

INFORMATION FOR THE INSTRUCTOR

SECTION 1—TRAINING TESTS *Reserved*

SECTION 2—ASSOCIATED FILMS

Introduction

531. The films described below are available in the Services Kinema Corporation (SKC) libraries. For details of how to obtain films, see Army Film Catalogue, Army Code No. 70477.

Individual Fieldcraft (C1201) Time: 15 minutes

532. Shows how personal camouflage, use of ground cover and various movement techniques enable a soldier to see and engage the enemy without being observed.

Finding the Enemy (C1202) Time: 21 minutes

533. Shows how to examine ground, locate the enemy, and by the use of fire orders how to engage targets correctly.

Night Marksmanship (C1203) Time: 16 minutes

534. Shows various techniques of effectively engaging the enemy in the dark.

Night Vision (C1207) Time: 20 minutes

535. Explains simply the structure and function of the eye, the difference between day and night vision, the process of night adaptation and the techniques for developing proficiency in seeing at night.

Night Warfare (C1208) Time: 22 minutes

536. Introduction. Illustrates points of training that will facilitate operating at night.

Dangerous Noise, Part 1.—Listen While You Can (C7922) Time: 21 minutes

537. For general service audiences to make them aware of the problem.

Dangerous Noise, Part 3.—Hear Your Enemy (C7924) Time: 11 minutes

538. The problem as it effects the serviceman in the field.

RESTRICTED

RESTRICTED

RESTRICTED

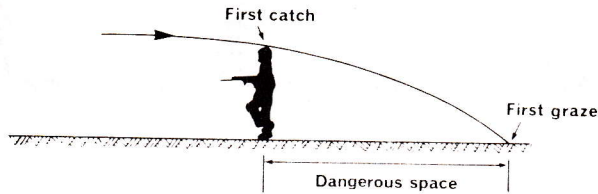
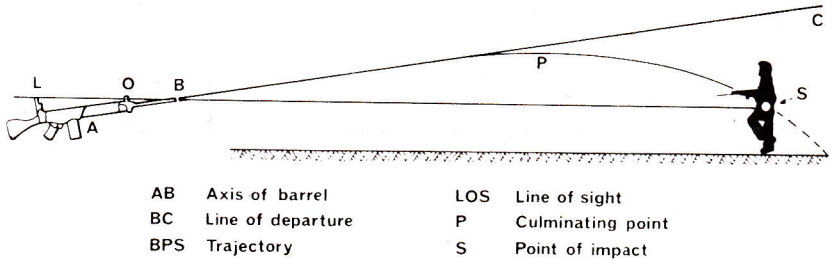
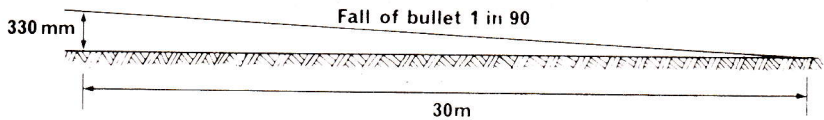
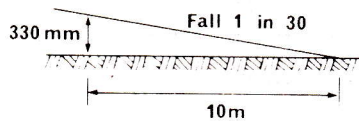


Fig 40. Definitions



From 600m range the dangerous space for a prone man (330mm high) is approximately 30m



From 1000m range the dangerous space is approximately 10m

Fig 41. The range

RESTRICTED

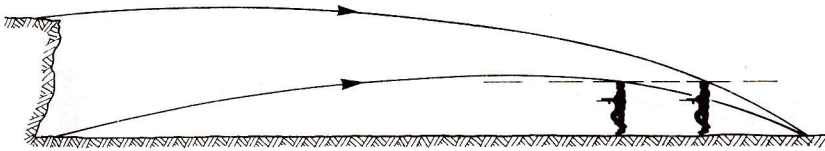
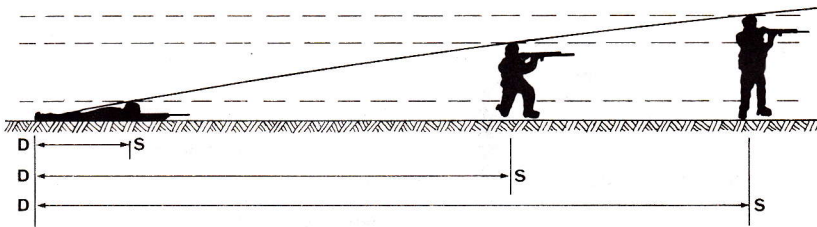
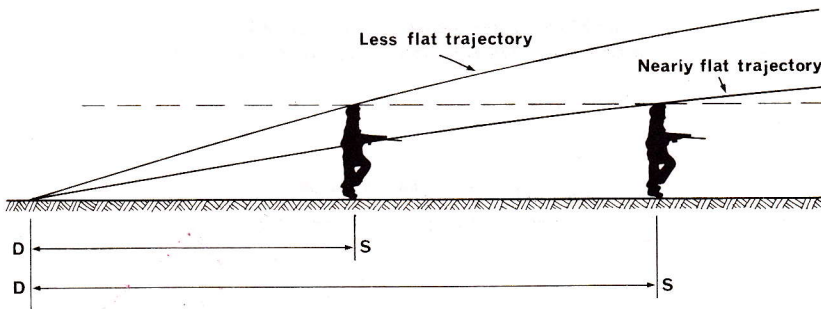


Fig 42. The height of the weapon above the target area



DS Dangerous space

Fig 43. The height of the target engaged



DS Dangerous space

Fig 44. The flatness of the trajectory

RESTRICTED

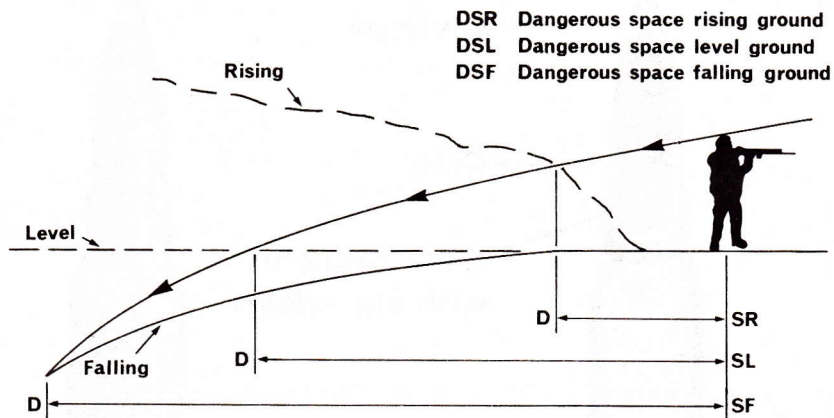


Fig 45. The shape of the ground

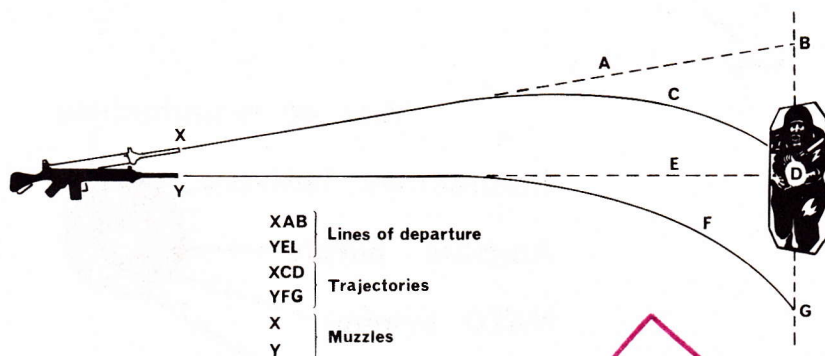


Fig 46. Elevation

RESTRICTED

'A' SQN
 TAVR CENTRE, WIGAN
 30 NOV 1978
 DUKE OF
 OWN YL

RESTRICTED

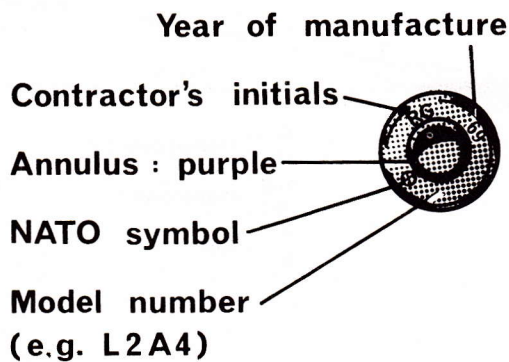
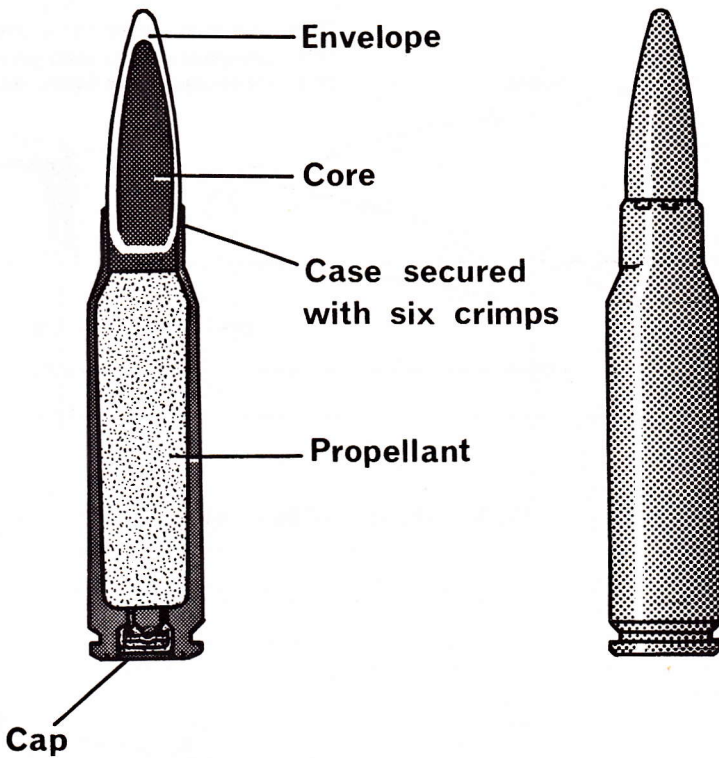


Fig 47. 7.62 mm Ball ammunition

RESTRICTED

RESTRICTED

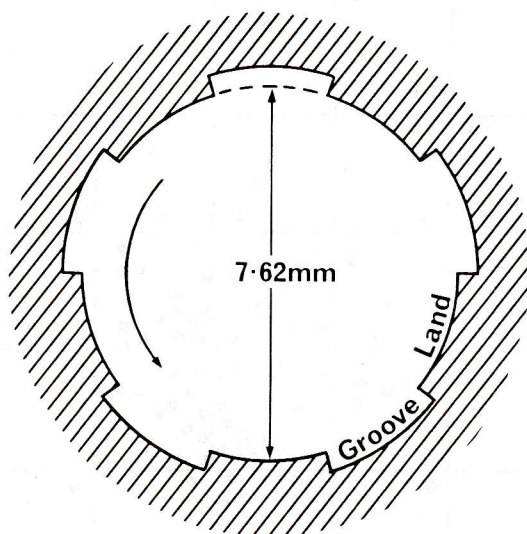


Fig 48. The inside of the barrel

RESTRICTED

RESTRICTED

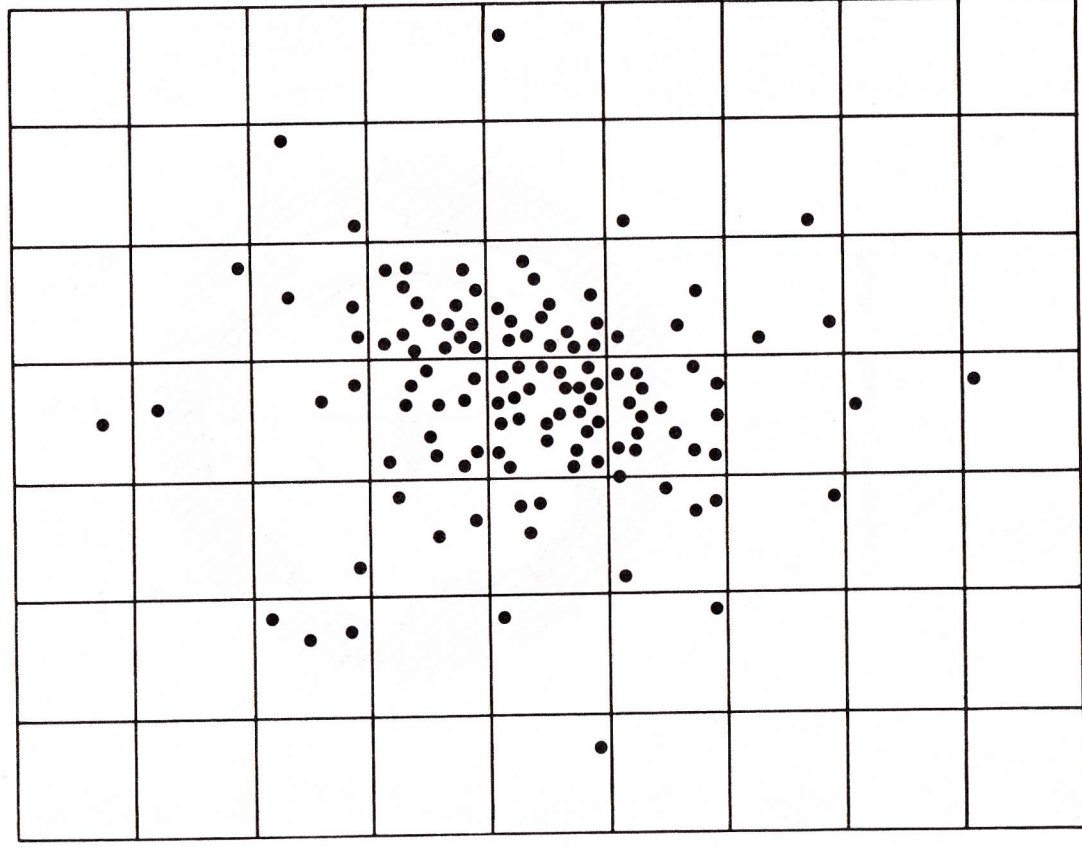


Fig 49. GPMG cone of fire (bipod mounted)

5-6

RESTRICTED

RESTRICTED

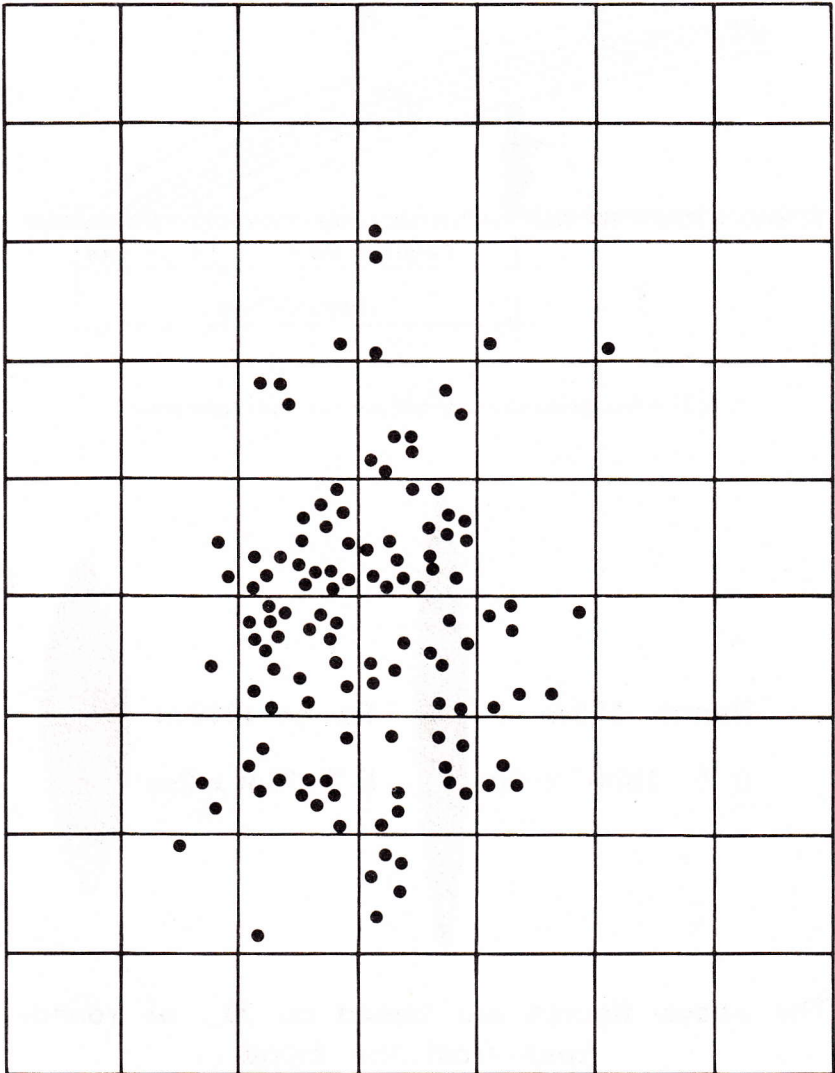


Fig 50. GPMG cone of fire (tripod mounted)

RESTRICTED

RESTRICTED

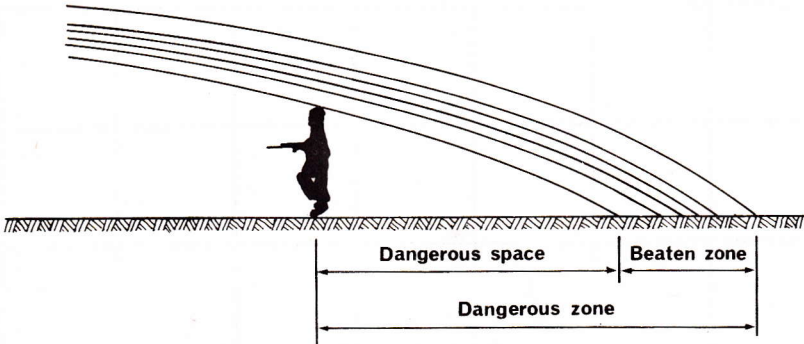
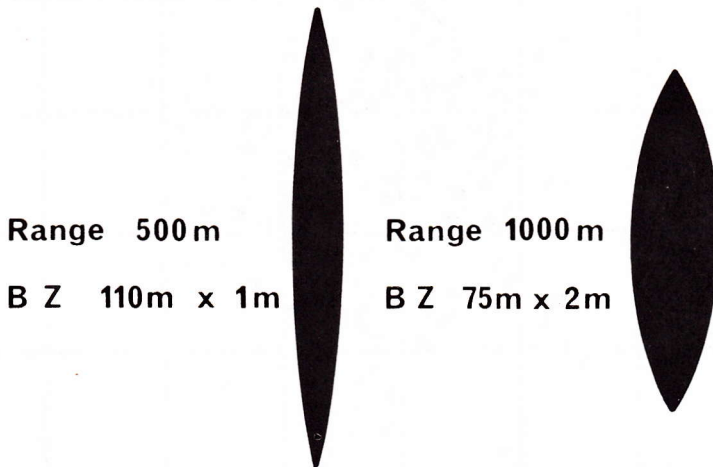


Fig 51. Dangerous space, dangerous zone and beaten zone



The above figures are based on 90% of rounds fired from the bipod.

Fig 52. GPMG beaten zones at 500 and 1000 metres

RESTRICTED

RESTRICTED

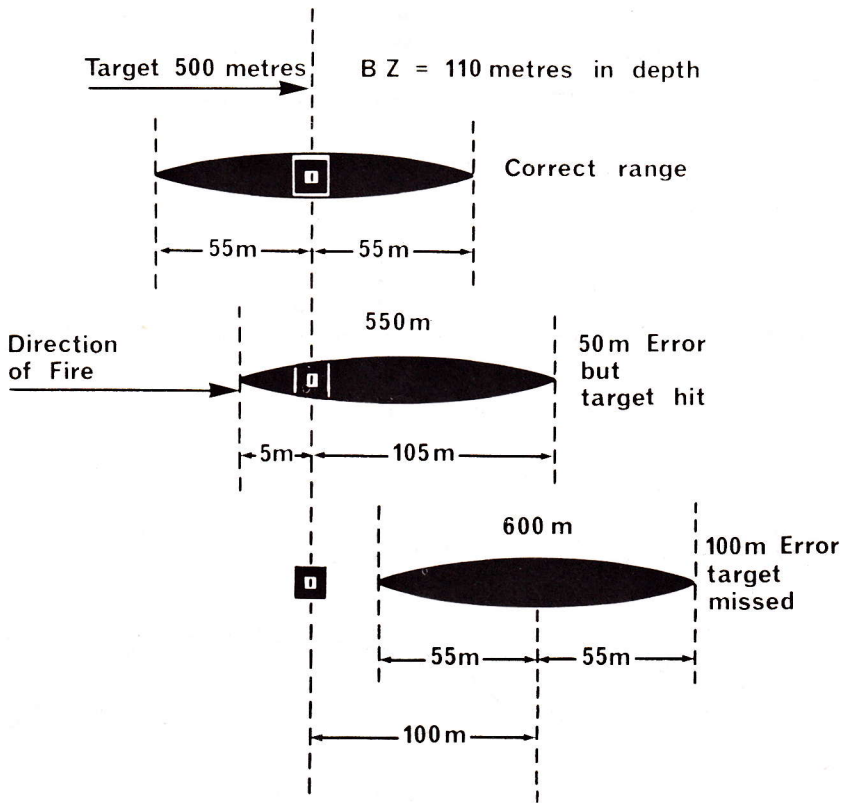


Fig 53. Permissible error

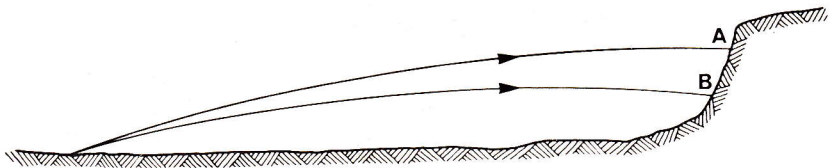


Fig 54. Cone of fire against a steep hillside

RESTRICTED

RESTRICTED

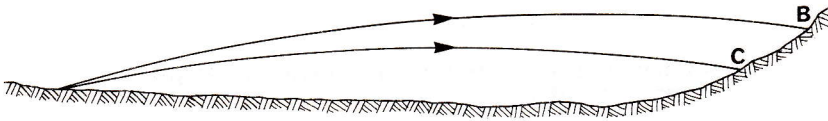


Fig 55. Cone of fire against rising ground

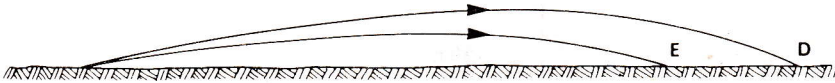


Fig 56. Cone of fire on level ground

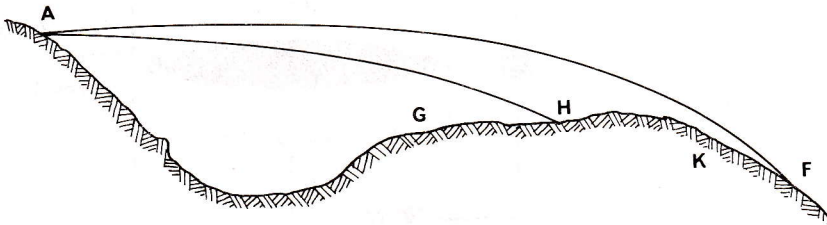


Fig 57. Cone of fire on reverse slope

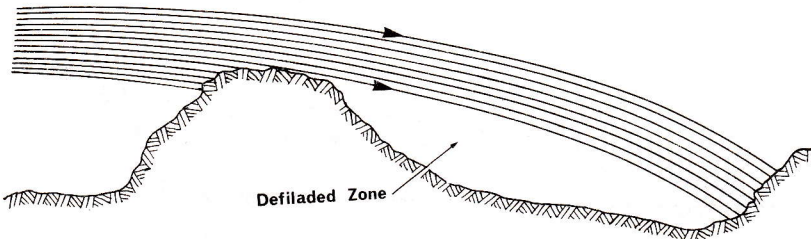


Fig 58. A defiladed zone

RESTRICTED

CHAPTER 5

THE THEORY OF SMALL ARMS FIRE

SECTION 3—DEFINITIONS OF COMMONLY USED TERMS

(Reference Fig 40. and Filmstrip '*Theory of Small Arms Fire*'. Catalogue No. D 863)

539. *The Axis of the Barrel.* An imaginary line down the centre of the bore from breech to muzzle.

540. *Jump.* The term, expressed as an angle, which, on the departure of the bullet denotes the difference between the line of sight and an imaginary straight line drawn through the axis of the barrel.

541. *The Line of Departure.* A straight line representing the forward direction of the bullet at the moment of leaving the muzzle.

542. *The Line of Sight.* An imaginary straight line from the firer's eye through the sights, to the point of aim.

543. *The Trajectory.* The curved path taken by the bullet in its flight from rifle to target or to the point of its first graze. (See Annex A.)

544. *The Culminating Point.* The greatest height above the line of sight to which the bullet rises in its flight. This point occurs a little beyond half the distance which the bullet travels.

545. *The Angle of Sight.* The angle formed by the line of sight and the horizontal. In cases where the target is above the firer the angle of sight is increased, when the target is below the firer it is decreased.

546. *The Angle of Elevation.* The angle between the line of sight and the axis of the barrel.

547. *Ricochets.* Bullets which are deflected after striking the ground or any other obstacle, and continue in flight, are said to ricochet. Ricochets may occur from any surface but are less likely from soft ground than from hard surfaces. Bullets ricochet freely from water and from any surface may rise abruptly or deviate considerably to right or left from their original course.

548. *The First Catch.* The point in the trajectory when the bullet would strike the top of the target.

549. *The First Graze.* The point in the trajectory when the bullet will first strike the ground.

550. *The Dangerous Space.* For any particular range, the dangerous space is the area between the first catch and the first graze. The extent of the dangerous space depends on:

RESTRICTED

- a. The range (*see* Fig 41).
- b. The height of the weapon above the target area (*see* Fig 42).
- c. The height of the target engaged (*see* Fig 43).
- d. The flatness of the trajectory (*see* Fig 44).
- e. The shape of the ground (*see* Fig 45).

551. The dangerous space:

- a. Decreases as the range increases, owing to the steeper angle of descent of a bullet at the longer ranges (*see* Fig 41).
- b. Increases:
 - (1) The nearer the trajectory is to the ground (*see* Fig 42).
 - (2) The nearer the slope of the ground is similar to the angle of slope of the bullet (*see* Fig 45).

RESTRICTED

SECTION 4—FACTORS AFFECTING SIGHTING

552. **Elevation.** The force of gravity pulls the bullet downwards whilst the effect of air resistance rapidly reduces its velocity. These two factors combine to cause the bullet to travel downwards on a curved path. To counteract this drop the bullet is projected to an angle of elevation which is always greater than the angle of sight in order that the line of departure is directed at a point which is the same distance above the target as the bullet would strike below the target if the angles of sight and elevation were equal (see Fig 46).

553. **Target.** Because the target must be kept in view, a weapon is provided with sights, which enable the firer to adjust the elevation required without losing sight of his point of aim.

554. **Sighting of Small Arms Weapons.** Each weapon is carefully tested at short ranges before issue and is sighted to hit within certain close limits of the point aimed at. There are, however, in each weapon small manufacturing variations which cannot be avoided in large scale production. Further variations are produced by the wear of parts and by the slackening or tightening of screws. These inequalities produce an individuality in each weapon which shows itself in a slight variation of the sighting elevation requirement.

555. **Wind.** The effect of a side wind on the path of a bullet increases with the range and is considerable at all ranges except the very shortest. Head and rear winds also have an effect on the bullet at longer ranges (see detailed wind tables at Annex B).

556. **Atmospheric Conditions.** The effect of atmospheric conditions other than wind need not, normally, be considered. It is sufficient if it is realized that in fighting at high altitudes less elevation may be necessary. Alterations of temperature need not be taken into consideration, except that when cartridges have become heated in the sun rifles are liable to shoot high.

557. **Wet Ammunition.** This tends to make bullets go high. This is due to the fact that when the chamber or bullet is wet the cartridge is unable to expand fully on firing resulting in an increased pressure in the chamber which will increase the velocity of the bullet and so cause it to strike the target higher than normal. The same will also happen if the chamber or bullet is oily.

RESTRICTED

SECTION 5—ELEMENTARY THEORY (SLR)

558. **Description of 7-62 mm Ammunition.** The round weighs approximately 370 grains and comprises a bullet, case, cap and propellant (see Fig 47).

a. **Bullet.** Consisting of a gilded metal envelope enclosing a lead and antimony alloy core, the bullet normally weighs 144 grains and is cannellured near the base for the attachment of the case.

b. **Case.** The case, made of cartridge brass, is necked and is of rimless design. The base is formed with a cap chamber and an integral anvil with two fire holes leading to the interior of the case. The contractor's initials or his recognized trade mark is stamped on the base.

c. **Cap.** The cap is drawn from cartridge brass and is varnished internally. It is filled with 0.45 grains of an approved cap composition, pressed and covered with a paper disc. It is ringed in the cap chamber and the annulus is lacquered dark purple.

d. **Propellant.** The filling consists of approximately 42-90 grains of ball powder propellant.

After Filling. The case is secured to the bullet by six 60 degree indents.

559. **Rifling.** A barrel is said to be rifled when it has spiral grooves cut in the interior surface of the barrel from a little forward of the chamber to the muzzle (see Fig 48).

560. **Firing.** When a weapon is fired, certain factors influence the flight of the bullet. These are:

a. *Before the bullet leaves the barrel:*

(1) *The force of the explosion.*—When a round of ammunition is fired the gases formed by the burning of the charge push the bullet forward through the bore of the muzzle and out into the air. With 7-62 mm ammunition the velocity with which a bullet leaves the muzzle is 823 metres per second.

(2) *Rifling.*—When a round is fired, the bullet is forced into the grooves along the barrel and, consequently, when it leaves the muzzle it has acquired a spinning motion. This spin tends to keep the nose foremost and to ensure steadiness in flight with resultant accuracy.

(3) *Movement due to recoil.*—The gases generated by the detonation of the propellant charge exert a force equally in all directions, moving the bullet along the bore and exerting an equal force rearwards against the empty cartridge case and locked breech, causing the weapon to move rearwards or recoil. This rearward action, above the centre of gravity of the rifle and the shoulder resistance, causes the front end of the weapon to move in an upward direction. This effect can be seen by watching the movement of the foresight as a round is fired.

(4) *Oily barrels.*—If shots are fired with an oily barrel, abnormal vibration, and consequently erratic shooting, will occur until the oil is burnt up.

RESTRICTED

(5) *Effect of firing with attachments fixed.*—The fitting of a bayonet or any other attachment will affect jump and therefore the accuracy of the rifle. Every soldier must determine the effect which any attachments will have on the sighting of his rifle.

(6) *Resting the rifle.*—The barrel should never be rested on cover when it is fired, as this will disturb the pattern of the shock waves which are transmitted along the barrel following the detonation of the round. This disturbance will affect the jump of the rifle and cause the bullet to be displaced.

b. *After the bullet leaves the barrel:*

(1) *Resistance of the air.*—This causes the velocity of the bullet to decrease rapidly. It travels about 600 metres in the first second, 400 metres in the second and 300 metres in the third.

(2) *Gravity.*—This tends to draw the bullet downwards with increasing effect throughout its flight.

562. These factors make a bullet travel on a curved path; the fall of the bullet becomes steeper as the range increases.

RESTRICTED

SECTION 6—ELEMENTARY THEORY (GPMG)

563. When a burst is fired from the GPMG each shot is projected on a slightly different line of departure. As the burst strikes a vertical target the shots will form a pattern, oval in shape, with the density of shot decreasing towards the edges. This pattern is known as a cone of fire (*see* Figs 49 and 50).

564. At long ranges and less distinct targets fire is applied to the ground in the area of the target. The bullets of the cone of fire strike the ground to form a beaten zone. The shape of the beaten zone is long and narrow, the lower shots of the cone striking the ground at a shorter distance from the GPMG than the higher ones. The size of the beaten zone will vary with the range and the shape of the ground.

565. The pattern of the bullets is more dense in the middle of the beaten zone (*see* Fig 51). As the range increases the length of the beaten zone decreases and the width increases (*see* Fig 52).

566. The most effective form of machine gun fire is achieved when the lower shots of the cone produce the maximum dangerous space to combine with the beaten zone. This area, formed by the beaten zone PLUS the dangerous space, is known as the dangerous zone. In the case of a machine gun, firing at a range of 600 metres over flat ground, the dangerous zone will extend from the muzzle to the limit of the beaten zone.

RESTRICTED

SECTION 7—OBSERVATION OF FIRE

567. Ranging is the process of determining the direction and elevation required to hit a given target by observation of fire.

568. Observation of fire is the most accurate method of obtaining correct elevation and wind allowance, any errors will be seen by relating the strike to the target area.

569. The permissible error in ranging is the term applied to the error which can be made in estimating range, while still keeping the target within the beaten zone. The permissible error is equal to half the length of the beaten zone for any particular range (*see* Fig 53). For example, assume the target to be 500 metres distant. The beaten zone of the GPMG at that range is approximately 110 metres in length. If the estimated range is accurate, half the beaten zone will be in front and the other half beyond the target. If an error of over 55 metres is made, i.e., half the depth of the beaten zone at this range, the whole of the beaten zone will miss the target.

RESTRICTED

SECTION 8—THE EFFECT OF GROUND ON THE BEATEN ZONE

570. Ground has an important bearing on fire effect. A study of the shape of the ground at the target, is therefore, essential to obtain accurate results.

- a. A cone of fire (*see* Fig 54) striking a steep hillside will cover a very small area of ground, and therefore, produce a small beaten zone—AB.
- b. The same cone of fire (*see* Fig 55) striking a more gentle slope will cover a slightly larger area of ground—BC.
- c. On level ground, the area covered will be still greater—DE (*see* Fig 56).
- d. The largest area swept by bullets will be where the fall of the ground conforms to the trajectory of the bullet; for example—a reverse slope (*see* Fig 57), in which case the whole area FG is a dangerous zone, of which FH is the beaten zone. Troops, even though under cover from view K, would be in danger from fire from A.

The above examples show that it is more difficult to obtain a fire effect against rising ground than against ground which is flat or falling away.

571. A defiladed zone is the area of ground which would be included in the beaten zone, but for the fact that a proportion of the bullets of the cone have met an obstruction, usually a piece of higher ground (*see* Fig 58).

RESTRICTED**ANNEX A to
CHAPTER 5****TRAJECTORY TABLE**

Height of culminating point (in metres) above the line of sight of the 7·62 mm SLR firing SAA 7·62 mm, L2A4, muzzle velocity 823 metres per second.

Range in metres	Height of culminating point (metres)	Range to culminating point (metres)
200	0·061	105
300	0·203	155
400	0·372	215
500	0·688	272
600	1·010	330
700	1·682	385
800	2·355	460
900	3·625	528
1000	4·896	595
1100	6·732	663
1200	8·568	720

RANGE TABLE

For rifles firing SAA 7·62 mm, L2A4, with a muzzle velocity of 823 metres per second.

Range in metres	Tangent Elevation mils	Angle of descent mils
200	1·50	1·80
300	2·55	3·15
400	3·60	4·50
500	4·95	6·90
600	6·30	9·30
700	8·10	13·65
800	9·90	17·80
900	11·70	24·40
1000	15·30	30·70
1100	18·10	39·70
1200	21·10	44·60

RESTRICTED

ANNEX A
CHAPTER 2

TRAJECTORY TABLE

Height of culminating point (in metres) above the line of sight of the 7-62 mm SLR firing SAA 7-62 mm SLR, muzzle velocity 813 metres per second.

Range in metres	Height of culminating point (metres)	Range in metres
200	0.001	100
300	0.003	120
400	0.012	210
500	0.030	310
600	0.050	410
700	0.070	510
800	0.090	610
900	0.110	710
1000	0.130	810
1100	0.150	910
1200	0.170	1010

RANGE TABLE

For firing range SAA 7-62 mm SLR, muzzle velocity 813 metres per second.

Range in metres	Target elevation (mils)	Angle of descent (mils)
200	1.20	1.80
300	2.25	3.15
400	3.60	4.50
500	4.95	5.85
600	6.30	7.20
700	7.65	8.55
800	9.00	9.90
900	10.35	11.25
1000	11.70	12.60
1100	13.05	13.95
1200	14.40	15.30

DETAILED WIND TABLE (7.62 mm)

	WIND		RANGE IN METRES									
TYPE	STRENGTH	DIRECTION (O'CLOCK)	100	200	300	400	500	600	700	800	900	1000
			CORRECTION REQUIRED (IN METRES)									
MILD	8.05 km/h (5 MPH)	1 5 7 11	—	0.0254	0.0508	0.1270	0.2032	0.3048	0.4572	0.6350	0.8128	1.0414
		2 4 8 10	0.0254	0.0508	0.1016	0.1778	0.3048	0.4572	0.6858	0.9398	1.2192	1.5240
		3 9	0.0254	0.0508	0.1270	0.2540	0.4064	0.6350	0.9144	1.2446	1.6510	2.0828
	12.00 km/h (7.5 MPH)	1 5 7 11	—	0.0508	0.1016	0.1778	0.3048	0.4572	0.6858	0.9398	1.2192	1.5494
		2 4 8 10	0.0254	0.0762	0.1524	0.2794	0.4572	0.6858	1.0160	1.3970	1.8288	2.3368
		3 9	0.0254	0.1016	0.2032	0.3556	0.6096	0.9144	1.3462	1.8796	2.4638	3.1242
FRESH	16.09 km/h (10 MPH)	1 5 7 11	0.0254	0.0508	0.1270	0.2540	0.4064	0.6350	0.8890	1.2700	1.6510	2.0828
		2 4 8 10	0.0254	0.1016	0.2032	0.3556	0.6096	0.9144	1.3716	1.8796	2.4384	3.0480
		3 9	0.0254	0.1270	0.2540	0.4826	0.8128	1.2446	1.8034	2.5146	3.3020	4.1656
	24.14 km/h (15 MPH)	1 5 7 11	0.0254	0.1016	0.2032	0.3810	0.6096	0.9144	1.3716	1.8796	2.4638	3.1242
		2 4 8 10	0.0254	0.1524	0.3048	0.5588	0.9144	1.3716	2.0574	2.8194	3.6830	4.6736
		3 9	0.0508	0.1778	0.3810	0.7366	1.2192	1.8542	2.7178	3.7592	4.9530	6.2484
STRONG	32.19 km/h (20 MPH)	1 5 7 11	0.0254	0.1016	0.2540	0.5080	0.8128	1.2700	1.7780	2.5400	3.3020	4.1656
		2 4 8 10	0.0508	0.2032	0.4064	0.7112	1.2192	1.8288	2.6416	3.6576	4.8768	6.0960
		3 9	0.0508	0.2286	0.5080	0.9906	1.6256	2.4892	3.6068	5.0038	6.6040	8.3312

RESTRICTED

5-21

RESTRICTED

ANNEX B to
CHAPTER 5

RESTRICTED

LAW	ALPHABETIC	SYMBOLIC	CORRECTION FACTOR (100 TO 1000)									
			100	200	300	400	500	600	700	800	900	1000
LAW	(10 WLS)	10-10 WLS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAW	(10 WLS)	10-10 WLS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
LAW	(10 WLS)	10-10 WLS	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
			0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

RESTRICTED

